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THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 PUBLISHED WEEKLY Single Copies, 20 Cents

VOLUME 85, No. 3 535 North Dearborn Street, CHICAGO, ILL. JULY 18, 1925

CONTENTS AND SUBJECT INDEX

Radium Treatment of Carcinoma of the Cervix Uteri: Results at the Woman's Hospital After Five Years. George Gray Ward, M.D., and Lilian K. P. Farrar, M.D., New York.....159

Discussed by Drs. Ward, Schmitz, Bailey and Farrar.

A Clinical Classification of Bright's Diseases. Thomas Addis, M.D., San Francisco 163

Lesions of the Extremities Associated with Diabetes Mellitus. Frederick A. Coller, M.D., and Phil L. Marsh, M.D., Ann Arbor, Mich.....168

Discussed by Drs. Joslin and Coller.

Treatment of Pertussis by Roentgen Ray: An Analysis of Eight Hundred and Fifty Cases. Lawrence W. Smith, M.D.; Henry I. Bowditch, M.D.; Ralph D. Leonard, M.D.; Paul W. Emerson, M.D.; Edwin T. Wyman, M.D.; Elmer W. Barron, M.D.; Hyman Green, M.D.; Elliott Hubbard, M.D., and Max Tennis, M.D., Boston 171

Discussed by Drs. Abt, Hess and Smith.

Pharyngo-Esophageal Diverticula: Diagnosis and Preoperative Management. Porter P. Vinson, M.D., Rochester, Minn.....178

Discussed by Drs. Lahey, Jackson and Iglauer.

Rôle of Surgery in the Treatment of Pulmonary Suppuration. Evarts A. Graham, M.D., St. Louis.....181

Puncture of the Cisterna Magna: A Summary of Five Years' Experience. Franklin G. Ebaugh, M.D., Denver.184

Flaccid Paraplegia. Edward Livingston Hunt, M.D., and Leon H. Cornwall, M.D., New York.....186

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

Aneurysm of the Axillary Artery. J. S. Horsley, Jr., M.D., Richmond, Va..189

A Portable Oxygen Tent. Alvan L. Barach, M.D., and Carl A. L. Binger, M.D., New York.....190

SPECIAL ARTICLE

Report of Committee on Hereditary Blindness 192

EDITORIALS

Lowering the Blood Pressure with Liver Extract 194

Work and Protein Metabolism.....195

The Cultivation of Endameba Histolytica 196

The Etiology of Acute Appendicitis.197

CURRENT COMMENT

The Challenge of the Patient with Chronic Disease.....197

Genesis of the Blood Platelets.....198

The British Cancer Research.....198

(Subject Index on next page)

ASSOCIATION NEWS 198

Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on June 14, 1918. If undeliverable, return postage is guaranteed

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SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "T," Therapeutics; "Ml," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics.

A. M. A., report of committee on hereditary blindness *192, 218
Abdomen, laparotomy scar, uterine mucosa in ab-233
Abortion, technic for emptying uterus in.ab-233
Acidosis, lactic acid ab-221
Actinomycosis, cutaneous recurrent, after pregnancy ab-222
Anemia, Pernicious, etiology ab-227
excochleation of bone marrow in....ab-230
Anesthesia, sacral ab-233
local, ortho-oxybenzylalcohol for....ab-235
local, potassium bromid for....ab-235
Aneurysm of axillary artery....*189
Antivenom outfit 215
Aorta, ascending, radiography of....ab-231
Appendicitis, chronic, diagnosis....ab-235
Appendix, solid tumors of....ab-229
Arsphenamins, dialysis of ab-233
Arteries, innervation, in extremities....ab-232
Arthritis deformans, roentgenotherapy...ab-235
chronic, intestinal protozoa in....ab-224
Ascites, extreme ab-223
Association News 198
Astereognosis ab-236
Astragalus, dislocation of ab-229
Auricular Fibrillation in child....ab-221
Bacteriophage in feces in scarlet fever...ab-225
Biologic importance of inorganic elements.. 209
Birth control, ethics of.... 204
Bladder, tumors of ab-235
Blindness, hereditary, report of committee on *192, 218
Blood anoxemia, portable oxygen tent for.*190
calcium and ultraviolet rays ab-224
circulation in capillaries ab-223
glycolysis ab-222
histiocytes in ab-229
platelets, genesis of....E-198
pressure, lowered, with liver extract...E-194
sugar in kala-azar ab-228
venous, gaseous content of....ab-224
Book Notices 216
Books Received....Adv. page 28
Borage tea 215
Brain hemorrhage not immediately fatal.ab-225
tumors, percussion on ab-233
Breuer, Josef, death of.... 208
Bright's diseases, clinical classification....*163
Calculi, Ebstein's theory of....ab-232
Calcutta University, rebuff to.... 205
Cancer ab-236
British cancer research....E-198
tar, and tissue reactivity changes....ab-236
Capillaries, circulation in ab-223
Carbohydrate metabolism of tumors....ab-224
Cecum, undescended ab-227
Cerebrospinal Fluid, colloidal benzoin test.. 214
Chenopodium, oil of, fatal poisoning with.ab-234
Chickenpox and herpes zoster....ab-229
Child welfare legislation.... 203
Chiropractic, practice of medicine (La.), ...Ml-219
Cholesterol, irradiated, antirachitic value.ab-224
irradiated, chemical change in....ab-224
Chorea, acute arteriosclerotic ab-236
Cisterna magna, puncture of....*184
Cod Liver Oil, chemical examination of antirachitic substances ab-224
Colloidal benzoin test.... 214
Correspondence 212
Deaths 210
Dental disease, prevalence of.... 204
profession and ethics....C-212
Diabetes Mellitus, lesions of extremities in.*168
plasma proteins in ab-225
pneumothorax treatment in....ab-233
Diarrhea, duodenal contents in....ab-221
Diphtheria anatoxin immunization with.... 206
measles with C-214
Diuresis after thermic stimuli....ab-232
vs. hydrochloric and lactic acid milk.ab-221
Dysentery, bacteriology of....ab-228
Eclampsia nutans ab-227
profuse bloodletting in ab-234
Ectoscopy ab-232
Eggs, antiscorbutic properties ab-224
Encephalitis, epidemic, nystagmus in....ab-230
epidemic, Levaditi on.... 207
Endameba histolytica, cultivation of....E-196
Entomology, Imperial Bureau of.... 205
Epilepsy, modern treatment....ab-230
Epinephrin, dosage of....ab-232
reaction ab-232
Erysipelas, ethyl chlorid freezing in...ab-331
Esophagus, diverticula *178
Evidence, acquired by consultant privileged (Minn.) Ml-220
Extremities, lesions, in diabetes....*168
Faculté de Médecine of Paris, memorial... 207
Fibroma of acoustic nerve....ab-222
uterine ab-230
Flatulence, surgical, charcoal in....ab-231
Flumerin in syphilis ab-222
Foreign Letters 204
Fourth of July fatalities.... 203
Fruit diet, diuretic action....ab-232
Gallbladder, calculi, in adolescents....ab-227
Gangrene and suprarenals ab-235
Glomerulonephritis, experimental ab-222
Glycosuria, physiologic ab-231
Government Services 204
Hexamethylenamin, administration of.... 214
in autogenous vaccine preparation....ab-236
Hip Joint, deformity ab-232
Ichthyosis, basal metabolism in....ab-221
Institutions, challenge of patient with chronic disease E-197
Insurance, accident, "external marks," (Neb.) Ml-219
Kidney; nephropexy ab-231
decapsulation in toxic conditions....ab-235
disease, blocking splanchnic nerve for.ab-236
tumors ab-232
Knee, stiff, operation for....ab-223
Gynecology, psychotherapy in....ab-234
organotherapy plus irradiation in....ab-233
Hair pigment, regeneration of....ab-234
Heart, prenatal maternal ab-225
spontaneous rupture, survival after...ab-231
suture, 2 patients 20 years after....ab-230
Hemiplegia, from cobra bite....ab-231
Hemorrhoids, treatment ab-231
Labor, arrest of placenta and palpation.ab-233
femur broken in delivery (Mass.)....Ml-220
painless, by synergistic method....ab-235
Lathyrism ab-228
Leg ulcers, treatment of....ab-232
Leishmaniasis, blood sugar in....ab-228
sandfly transmits ab-228
urea stibamine in ab-228
Leprosy, prophylaxis, in Indo-China.... 206
Liver extract lowers blood pressure....E-194
Lungs, hydatid air cyst ab-229
hydatid cyst ab-231
infiltrations, diagnosis ab-234
suppuration, surgery in....*181
Lymphogranuloma, etiology ab-236
subacute inguinal ab-230
Malaria, Anopheles rossii does not carry..ab-228
Malpractice, femur broken in delivery (Mass.) Ml-220
roentgen rays, failure to use (Wis.)...Ml-219
Marriages 210
Maternity benefit failure, in Australia.... 205
Measles, convalescents' serum in....ab-236
diphtheria with C-214
Medical Education opportunities, postgraduate, in Vienna.... 208
Medical Education, Registration.... 215
Medical School, new, in Japan.... 203
Medicolegal 219
Meetings, Coming Meetings.... 220
Meningitis, tuberculous, curability of....ab-234
Menstruation, vicarious ab-236
true, after beginning pregnancy?....ab-233
Milk, diuretic action of....ab-232
dried, evaporated vs. fresh cow's milk..ab-227
hydrochloric, vs. lactic acid milk....ab-221
Mines, coal, fatalities in.... 218
Mosquitoes and pine oil....ab-221
control, turpentine for....ab-221
Muscle work and protein metabolism....E-195
Nerve, acoustic, fibroma of....ab-222
News 198
Ophthalmia, dietetic ab-224
Osteomyelitis cause of sarcoma....ab-236
Oxygen tent, portable *190
Oxyuriasis ab-232
Oysters cause typhoid fever epidemic.... 218
Paralysis, flaccid paraplegia *186
genera pathology of ab-229
testamentary capacity (W. Va.)....Ml-220
Paratyphoid A bacillus studies....ab-229
C bacillus ab-229
Pasasa larva, irritating properties of....ab-221
Pellagra from rectal stricture....ab-226
yeast treatment in....C-212
Pemphigus, Davis' treatment....ab-223
Pericardium, adherent, cardiolysis for..ab-226
Pharynx, diverticula *178
Pine Oil, effect on mosquitoes....ab-221
Piñerua, tribute to.... 208
Pituitary Body, lymphocytic infiltration.ab-222
Placenta, arrest of, and palpation....ab-233
retained, prophylaxis and treatment of.ab-233
Pleuritis, cause of....ab-228
Pneumothorax, pseudopneumothorax ab-232
Pregnancy, early diagnosis of....ab-234
actinomycosis in ab-222
bilateral tubal ab-227
kidney function during ab-236
prenatal maternal heart....ab-225
pyelitis in, and the fetus....ab-236
true menstruation in ab-233
tubal ab-230
when does it begin?....ab-235
Priapism, protracted ab-232
Privilege Communications, consultant cannot disclose (Minn.) Ml-220
Propaganda for Reform.... 212
Prostate, obstruction, roentgenotherapy...ab-232
enlarged, errors in diagnosis and treatment ab-234
Prostatectomy, prognosis ab-231
Protein metabolism and muscle work....E-195
nitrogen, determination of....ab-224
Pruritus, protein sensitization in....ab-233
vulvae, treatment of ab-234
Psoriasis, monilia in ab-222
treatment of ab-226
Psychotherapy in gynecology ab-234
in outpatient work ab-223
Pylorus and stomach acidity ab-232
Queries and Minor Notes.... 214
Rat Bite Fever, spirochetes in....ab-228
Reflexes, posture, in man....ab-232
Respiration, artificial, effect of....ab-235
Roentgen Rays, failure to use (Wis.)....Ml-219
Roentgenotherapy, stimulation ab-234
surface, with very soft roentgen rays..ab-234
Sarcoma from inflammations ab-236
Scarlet Fever, bacteriophage in feces in..ab-225
Sclerodermia, endocrine disorders in....ab-233
Sclerosis, amyotrophic lateral ab-229
multiple, treatment of ab-233
unilateral amyotrophic, from brain tumor ab-229
Scrofula and affections of teeth....ab-234
Skin diseases, dermatosis ab-232
Smallpox vaccine, study of.... 207
Snake bite, antivenom outfit.... 215
Soap, neutral soft ab-228
Society Proceedings 203, 220
Spinal Cord diseases, iodized oil in diagnosis ab-230
Sputum, repeated examination ab-226
State Board Examinations.... 215
Stomach acidity and pylorus ab-232
disease, pyloric muscle in....ab-235
disorders in disease of other organs....ab-231
tuberculosis ab-236
Streptococcus infections, treatment ab-234
Strychnin poisoning by drug....ab-232
Suprarenals, bone marrow in....ab-236
rôle in gangrene ab-235
Surgery, minor, thermocautery in....ab-234
Syphilis, bismuth in....ab-223
flumerin in ab-222
Teeth, prevalence of dental disease.... 204
Thermocautery in minor surgery ab-234
Thirst, sensation of ab-234
Thrombidiasis in Vienna ab-235
Thyroid, pathologic physiology ab-230
Tonics and Sedatives....Adv. page 22
Tuberculin reaction, intradermal, vs. prognosis ab-231
Tuberculosis, experimental, in clinical diagnosis ab-236
of blood in lipolytic activity in....ab-221
pulmonary, and sea climate ab-236
Turpentine, larvicidal properties ab-221
Typhoid epidemic from oysters.... 218
Typhus, unapparent ab-229
University study in Germany.... 209
Ureter, to induce atony of....ab-235
transplantation of ab-226
Urination, nocturnal incontinence ab-229
Uterus, adnexa, inflammations of....ab-233
cancer, radium treatment *159
cancer, Wertheim operation for....ab-230
fibromas ab-230
hydatidiform mole ab-233
Vaccine virus, cultivation of....ab-222
hexamethylenamin in preparation of....ab-236
Varicose Veins, glucose injections in....ab-234
Vertigo, paralyzing ab-230
Vital statistics for Bavaria.... 210
Wassermann Reaction and sulpharsphenamin ab-222
Whooping Cough, roentgenotherapy....*171
vaccine treatment of ab-236
Wills, paralysis and testamentary capacity (W. Va.) Ml-220
Yeast in pellagra treatment....C-212

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 85, NO. 3 CHICAGO, ILLINOIS JULY 18, 1925

RADIUM TREATMENT OF CARCINOMA OF THE CERVIX UTERI

RESULTS AT THE WOMAN'S HOSPITAL AFTER FIVE YEARS *

GEORGE GRAY WARD, M.D.
AND
LILIAN K. P. FARRAR, M.D.
NEW YORK

In the six years that we have treated cancer of the cervix with radium in the Woman's Hospital, we have based our treatment on the reaction of the neoplasm to the initial, or, as we prefer to call it, the therapeutic, dose as seen from six to eight weeks after the first radium treatment has been given. In a recent paper by one of us,[1] the technic of administering the radium and the clinical reaction as seen in the cervix for from six to eight weeks following the application is fully described. In brief, the initial dose given is from 2,400 to 3,600 milligram hours. The radium salt is in tubes, and radium needles are used when the paracervical tissues are involved. Until recently, needles were not used unless the case was a definite Class 3 or 4. We have lately employed needles more frequently in the cervicovaginal margins whether they are palpably involved or not. The subsequent dose or repeated doses depend on the retrogression of the tumor, and any evidence of reactivity in the cancer cells at a later period. We believe from our experience that these patients do better after irradiation if their resistance has been fortified by preliminary attention to their general health as far as the circumstances will allow. The associated anemia, which is frequent, can be markedly improved by a prophylactic blood transfusion in many cases, and it is our custom, whenever possible and necessary, to utilize this valuable aid. Five hundred cubic centimeters of blood administered a few days prior to the treatment will aid the patient to combat more successfully the toxins thrown into the system as a result of the local destruction of tissue by irradiation. The patients report once each month to the follow-up clinic, which we attend in person, and if in six or eight weeks after the first treatment the cervix does not show the contraction and pallor due to the development of scar tissue and occlusion of blood vessels resulting from sufficient dosage, a second treatment is advised, usually a repetition of the initial dose. Subsequent treatments depend on evidence of cell activity, and some of our most striking results have followed several irradiations.

It is important to point out that many of the subsequent treatments may only consist of implantation of needles in small suspicious areas that have developed since the previous inspection. We wish to emphasize the point that we believe better results may be obtained if this monthly inspection is carried out as a routine by the surgeons themselves, and that vigilance will enable one to note *early* any sign of an exacerbation of the disease in the vaginal tract. The prompt application of the radium to such a suspicious area will stamp out the rekindling fire before it has gained a dangerous headway. We believe that we have prolonged the lives of some of our patients by this watchfulness—here eternal vigilance is surely the price of safety.

We do not believe that there can be a uniform dosage if we are to obtain the best results from radium. Every case of cancer is a study by itself, and we think that we have seen a considerable variation in the response to the initial dose in cases with the same type of cell and the same stage of the disease. As one of us [2] has pointed out in discussion elsewhere, it is not always possible to give a definite classification of the type of cell in every case, as frequently the types are mixed in various proportions and often in different sections of the same cervix. The tissue removed for examination may be of one type, while in another and perhaps preponderating area another type may be present.

The dosage sufficient to cause a complete disappearance in one case with no recurrence after five or six years may not be sufficient to retard or cause retrogression in another case of exactly similar pathologic findings and extent of the disease. We cannot see the advantage of giving several treatments at short intervals as done in some clinics, before a sufficient time has elapsed to judge of the effect of the first application to the tissues, as there is a great difference in the response of the growth to radium treatment; nor can we believe in the massive doses that destroy the normal cells and pave the way for a rapid extension of the malignant tumor. Rather are we in accord with the belief of Dr. James Ewing, as quoted in the preliminary report of our work, that one can extricate and emphasize one principle of radiation therapy; viz., that irradiation is capable of restraining the growth of tumor cells without causing either autolysis or necrosis, and radium action is exerted on proliferating connective tissue. For the first time in the history of medicine we are in possession of an agent that will control the growth of connective tissue. From the study of much material, from operation and necropsy, in cases treated by deep irradiation, Dr. Ewing [3] says, he has become convinced that the clinical results are not usually due to the direct killing

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Farrar, Lilian K. P.: Preliminary Report of Results of Radium Treatment in Carcinoma of the Cervix, read before the Medical Society of the State of New York, Syracuse, May 13, 1925.

2. Ward, G. G., in discussion on uterine cancer, Tr. Sect. Obst., Gynec. & Abd. Surg., A. M. A., 1924, p. 244.

3. Ewing, James: The Mutter Lecture, Radium report of the Memorial Hospital, 1924.

effect of irradiation but are generally brought about indirectly and mainly by interference with the circulation—capillary, venous, arterial and lymphatic. In many cases the main part of the destruction has been caused by occlusion of blood vessels.

The value of our method of treatment is what we are now trying to ascertain after having pursued this course

TABLE 1.—*Age Incidence*

Decades	Number	Per Cent.
20–30	8	4.0
30–40	45	22.9
40–50	67	34.1
50–60	48	24.4
60–70	20	10.2
70–80	8	4.0
Total	196	99.6+

Youngest, 26; oldest, 77.

Results of Treatment of Eight Patients Under 30 Years of Age, or 4 Per Cent.

Case	Year	Class	Treatment	Lived
1	1919	3	Radium alone	2 yr.
2	1919	2	Radium alone	1 yr.
3	1919	2	Radium alone	1 yr.
4	1919	3	Radium alone	1 yr.
5	1920	2	Radium alone	5 yr.(living)
6	1921	3	Radium alone	4 yr.(living)
7	1921	3	Radium alone	1 yr.
8	1923	3	Radium alone	1 yr.

for six years. In the first years, operation and radium were used in combined treatment of twelve cases, and in the last six months we have employed the roentgen ray together with radium; but these cases are too recent to be included in this report. Our report, then, will endeavor to summarize our results of all cases treated by radium alone at the end of three years and of five years; those treated by combined radium and operation, and a total summary of this combined group with the pure radium series. The compiling of the statistics from our end-result cards, the radium record books, and the case histories has been done by Dr. Ralph L. Barrett of the staff. As Dr. Barrett was not connected with the clinic during the period covered by this report, his deductions are entirely impartial and have been unbiased by any personal equation.

It would seem desirable that some uniform method of reporting these statistics from the various clinics be adopted, if the full value of comparative studies is to be readily available. In studying the reports issued from time to time from the various clinics, this absence of uniformity is most striking and greatly complicates the problem.

We have used Schmitz'[4] classification for all our cases that we might more clearly define the stages of involvement, but we have substituted the word "secondary" for "recurrent" in the classification, believing that it will lead to less confusion of terms if the word "recurrent" is used only when it is intended to mean a renewed activity of the malignant cells whether after operation or radium treatment.

This report is based on the ward cases that have from the beginning of our radium treatment been assigned to the first division of the hospital, which is under our direct supervision and care, and also on our private cases. The private patients treated by other members of the staff have not been included on account of the variation of dosage and management.

4. Schmitz, Henry: End-Results of the Treatment of Cervical Carcinoma with Radium and Roentgen Rays, J. A. M. A. **84**: 81 (Jan. 10) 1925; Treatment of Inoperable Cervical Carcinoma with X-Rays and Radium, Am. J. Obst. & Gynec. **9**: 644, 1925.

We have based our percentages on the number of patients "living" after three and five year periods from the first treatment we have given. The total number of patients that we treated is 196, and of these all but eight have reported to the follow-up clinic or have been definitely traced and their condition known. We have deducted the missing eight rather than call them dead, believing this to be more nearly accurate, as recently six patients who had not been in the clinic in from one and one half to four years returned as the result of a vigorous follow-up, each one in excellent health and clinically free from carcinoma. The total number of cases traced, then, is 188; 181 were treated with radium alone, twelve were treated by combined radium and operation, and three were secondary cases (recurrence after panhysterectomy for carcinoma of the cervix). Forty-two cases of the 196 are of but two years' duration or less, and will therefore not be included in this report. There are, then, 154 cases to be reported: primary cases treated with radium alone, 139; primary cases treated with radium and operation, twelve; secondary cases treated with radium, three.

DEFINITION OF CLASSIFICATIONS

We have adopted Schmitz' classification:

1. *Primary Cases.*—Cases receiving initial treatment from us:

(*a*) Operable: Classes 1 and 2, limited to the cervix with no induration of paracervical tissue.

(*b*) Inoperable: Classes 3 and 4, any extension beyond cervix or induration of paracervical tissues.

2. *Secondary Cases.*—Cases recurring after panhysterectomy for cancer of the cervix.

It is of interest to note that in the series of 196 cases treated we found that carcinoma developed in the cervical stump left after a previous supravaginal hysterectomy in nine cases.

Mortality.—There were three deaths among the 181 patients treated by radium alone, or a mortality of 1.6 per cent.

TABLE 2.—*Incidence of Fistula Following Radium or Terminal Stage*

(*a*) Primary

Year	Class 1 No.	Class 2 No.	Class 3 No.	Class 4 No.	Healed No.
1919	..	1	3 (2)*	..	..
1920	..	..	1	..	1
1921	..	1	..	..	..
1922	..	..	1	..	..
Total	..	2	5 (2)	..	1

(*b*) Secondary

Year	Class 1 No.	Class 2 No.	Class 3 No.	Class 4 No.	Healed No.
1919	..	..	..	..	..
1920	..	..	..	1	..
1921	..	..	..	1 (2)*	1
1922	..	..	..	..	..
Total	..	..	..	2 (2)	1

Total, 196 cases; 11 fistulas in 9 cases; 2 healed, 5 per cent.
* Two fistulas in one case.

Operability.—Five patients were refused radium treatment on account of evidence of distinct metastasis and marked cachexia. These, with the 196, make 201 cases. Of these, forty-eight were Classes 1 and 2, giving an operability of 23.8 per cent.

Table 1 shows the age incidence by decades. The youngest patient was 26, the oldest, 77. There were eight patients under 30 years of age, or 4 per cent. Five of these patients died in one year, one in two years, and

two are living, one after four years and one after five years.

Table 2 shows the incidence of fistula. Nine patients had thirteen rectovaginal or vesicovaginal fistulas at some time following radium treatment. Two of these fistulas have healed, leaving eleven permanent fistulas, either as the immediate result of radium or from the extension of the carcinomatous growth, an incidence of 5 per cent.

Table 3 shows the three year end-results in cases of primary carcinoma of the cervix treated (*a*) with radium alone, (*b*) by radium and operation, and (*c*) secondary carcinoma treated with radium. The cases are arranged in classes from 1 to 4 according to Schmitz' classification. The number traced is given, the number living and the percentage for each year, then the total percentage of each, and finally the combined total percentage for all classes by radium or radium and operation. We will speak later of the operable cases, but now take up all classes together. In (*a*) the series of cases of primary carcinoma treated with radium alone, there were fifty-eight patients of all four classes living

TABLE 3.—*Three Year End-Results; Carcinoma of the Cervix*

(*a*) Primary Carcinoma; Radium

Years	Class 1 Traced	Class 1 Living	Class 1 Per Cent.	Class 2 Traced	Class 2 Living	Class 2 Per Cent.	Class 3 Traced	Class 3 Living	Class 3 Per Cent.	Class 4 Traced	Class 4 Living	Class 4 Per Cent.	Total Traced	Total Living	Total Per Cent.
1919	0	0	0	10	4	40	30	7	23.3	1	0	0	41	11	26.8
1920	0	0	0	7	7	100	24	10	41.6	0	0	0	31	17	54.8
1921	0	0	0	8	6	75	21	7	33.3	0	0	0	29	13	44.8
1922	1	1	100	5	5	100	26	11	42.3	0	0	0	32	17	53.1
													133	58	43.6

(*b*) Primary Carcinoma; Radium and Operation

1919	1	1	100	5	3	60	1	1	100.0	0	0	0	7	5	71.4
1920	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0.0
1921	1	1	100	2	1	50	0	0	0.0	0	0	0	3	2	66.6
1922	0	0	0	1	1	100	0	0	0.0	0	0	0	1	1	100.0
													11	8	72.7

(*c*) Secondary Carcinoma; Radium (Following Panhysterectomy)

1919	0	0	0	0	0	0	1	0	0.0	0	0	0	1	0	0.0
1920	0	0	0	0	0	0	1	0	0.0	0	0	0	1	0	0.0
1921	0	0	0	0	0	0	1	0	0.0	0	0	0	1	0	0.0
1922	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0.0
Total													147	66	
Combined total percentages															44.8

three years or longer, or 43.6 per cent. In (*b*) the primary carcinoma treated with radium and operation, there were twelve. These cases were largely confined to our earlier series, when a Wertheim or panhysterectomy was done after irradiation, but as our experience increased, it seemed to us that the method of treatment was open to doubt in view of the satisfactory results obtained with radium alone, although, in this series of eleven patients, 72.7 per cent. were living three years or longer. In (*c*) the secondary cases treated with radium, we had no patient living three years; so the combined total percentage for primary and secondary carcinoma of the cervix or all classes treated with radium, or radium and operation living three years or longer, is 44.8 per cent.

Table 4 shows the five year end-results of cases arranged in the same way as the previous table, except that there are only two series of 5 year groups. In (*a*) the series of cases of primary carcinoma of the cervix treated with radium alone, there were seventeen patients of all four classes living five years or longer, or 23.6 per cent. In (*b*) the cases of primary carcinoma treated by radium and operation, there were four patients living five years or longer, or 57.1 per cent. No patient with secondary carcinoma lived five years. The combined total percentage for patients with primary and secondary carcinoma of the cervix of all classes treated with radium or operation and radium living five years or longer is 25.9.

Table 5 shows the number of patients receiving more than one radium treatment. We believe that frequent

TABLE 4.—*Five Year End-Results; Carcinoma of the Cervix*

(*a*) Primary Carcinoma; Radium

Years	Class 1 Traced	Class 1 Living	Class 1 Per Cent.	Class 2 Traced	Class 2 Living	Class 2 Per Cent.	Class 3 Traced	Class 3 Living	Class 3 Per Cent.	Class 4 Traced	Class 4 Living	Class 4 Per Cent.	Total Traced	Total Living	Total Per Cent.	Combined Total
1919	0	0	0	10	3	30.0	30	5	16.6	1	0	0	41	8	19.5	
1920	0	0	0	7	6	85.7	24	3	12.5	0	0	0	31	9	29.0	
													72	17		23.6

(*b*) Primary Carcinoma; Radium and Operation

1919	1	1	100	5	2	40.0	1	1	100.0	0	0	0	7	4	57.1	
1920	0	0	0	0	0	0.0	0	0	0.0	0	0	0	0	0	0.0	
													7	4		57.1

(*c*) Secondary Carcinoma; Radium (Following Panhysterectomy)

1919	0	0	0	0	0	0.0	1	0	0.0	0	0	0	1	0	0.0	
1920	..	..	..	..	..	...	1	0	0.0	0	0	0	1	0	0.0	0.0
Total													81	21		
Combined total percentages																25.9

inspection of the cervix and immediate application of radium to any suspicious area has checked recurrence of the malignant growth in many of our cases. Of the 139 patients with primary carcinoma of the cervix receiving radium treatment, sixty-four, or 46 per cent., have received more than one application. Of the fifty-eight patients living three years or longer, twenty-six, or 44.8 per cent., received more than one irradiation, and of the seventeen patients living five years or longer, eight, or 47 per cent., had more than one irradiation.

Table 6 shows the three year end-result of radium alone in operable cases (Classes 1 and 2). It is

TABLE 5.—*Primary Carcinoma of Cervix Treated by Radium Alone; Patients Receiving More Than One Radium Treatment*

Year	Class 1	Class 2	Class 3	Class 4	Living 3 Yrs.	Living 5 Yrs.
1919	0	3	16	0	5	4
1920	0	4	12	0	8	4
1921	0	1	13	0	4	—
1922	1	1	13	0	9	—
Total	1	9	54	0	26	8

Summary

Total number of all classes of carcinoma of cervix treated with radium alone	139	
Sixty-four of these patients received repeated radium treatments at varying intervals, or		46%
Total number of all classes of carcinoma of cervix treated with radium alone living three years or longer	58	
Twenty-six of these patients received repeated radium treatments at varying intervals, or		44.8%
Total number of all classes of carcinoma of cervix treated with radium alone living five years or longer	17	
Eight of these patients received repeated radium treatments at varying intervals, or		47%

acknowledged, we think, that for the inoperable cases of cancer of the cervix, radium is preferable to surgery; but for the operable cases there seems still to be a great difference of opinion. The comparison of radium with surgery should be, however, in the operable cases alone. The question is, Should radium replace surgery in the operable case? The 20 to 25 per cent. absolute curability by the radical Wertheim operation comes only after years of surgical experience and a high primary mortality in the early years while getting this experience,

but the low mortality from radium treatment, and also the low morbidity, is in favor of radium only if we can get equal results with surgery. It is not the ease with which radium may be applied that we should consider, but what is the final result to the patient.

Table 6 shows the cases of operable carcinoma by years. Of the patients treated in the first year, only 40 per cent. were living three years later; but in two years of the series, 100 per cent. were living three years or longer, and the total percentage of the four series showed that twenty-three, or 74.1 per cent., of the patients were living three years or longer.

Table 7 shows the five year end-results of operable cases of carcinoma of the cervix treated with radium alone. Five years has been the time considered the test for absolute curability by the radical operation. In comparison of methods of treatment, surgery or radium, the same time limit should apply. We have eighteen cases of primary carcinoma of the cervix treated with radium; seventeen have been traced. We may say that every effort has been made to locate the eighteenth patient by search in the records of death certificates by the board of health, but she is not there, so we have omitted this case, reporting those we have traced and know to be living five years or longer. In the first series (1919), three are living, or 30 per cent. In the second series (1920), six are living, or 85.7 per cent. The total number of patients with primary carcinoma of the cervix treated with radium alone living five years or longer is nine, or 52.9 per cent. If we count as dead the eighteenth patient, the percentage of living patients after five years is 50.

TABLE 6.—*Results in One Hundred and Thirty-Nine Cases of Primary Carcinoma of the Cervix Treated with Radium Alone Observed Three Years or Longer*

Year	Classes 1 and 2	Traced	Living	Per Cent.	Classes 3 and 4	Traced	Living	Per Cent.	Total per Cent.
1919	11	10	4	40	32	31	7	22.5	26.8
1920	7	7	7	100	26	24	10	41.6	54.8
1921	9	8	6	75	21	21	7	33.3	44.8
1922	7	6	6	100	26	26	11	42.3	53.1
Total	34	31	23			Operability, 24.4 per cent.			

Number of cases treated with radium alone	139
Number of operable cases treated with radium alone	34
Number traced	31
Number of these patients living three years on longer	23, or 74.1%

TABLE 7.—*Results of Seventy-Six Cases of Primary Carcinoma of the Cervix Treated with Radium Alone Observed Five Years or Longer*

Year	Classes 1 and 2	Traced	Living	Per Cent.	Classes 3 and 4	Traced	Living	Per Cent.	Total per Cent.
1919	11	10	3	30	32	31	5	16.1	19.5
1920	7	7	6	85.7	26	24	3	12.5	29.0
Total	18	17	9			Operability, 23.6 per cent.			

Number of cases treated with radium alone	76
Number of operable cases treated with radium alone	18
Number traced	17
Number of these patients living five years or longer	9, or 52.9%

Table 8 presents the statistics compiled by Schmitz of radium results in several clinics by the use of radium, radium and roentgen rays, or surgery.

CONCLUSIONS

1. We believe that the initial dose of radium should be a test dose to ascertain the reaction of the malignant growth and of the normal tissues to radium activity.

2. It has been our aim to give only a dosage sufficient to inhibit the tumor growth and to produce scar tissue in the cervix and adjacent structures. It is by this production of dense scar tissue that the blood vessels are occluded and the cancer cells starved and isolated.

3. The surgeon himself should be acquainted with the clinical progress of the reaction to radium going on in the cervix.

4. Regular monthly visits on the part of the patient and personal inspection by the surgeon himself are absolutely necessary to check the renewed activity of the malignant growth in its incipience by subsequent radium treatment.

5. We believe that, if we succeed in arresting the progress of the disease by inhibiting the growth and walling in and imprisoning the cancer cells in cicatricial connective tissue, we are exposing the patient to a greater risk in opening up these barriers by the necessary trauma incident to a hysterectomy, and feel that we may do better for our patients if we rely on radium alone in view of our own statistics and those reported by other clinics.

TABLE 8.—*Percentages of Operability, and Relative and Absolute Curability of Cervical Carcinomas for Different Methods of Treatment* *

Clinic	Operability, per Cent.	Total Number	Total Number	Relative Cures	Absolute Cures	Method of Treatment
Clark, J. G.	17.0	140	12	27.2	8.6	Radium
Bailey and Healy	22.0	155	17	26.4	9.2	Radium
Kehrer	45.7	129	36	40.7	27.8	Radium
Ward and Farrar	23.6	72	17	43.6 (3 yrs.)	23.6	Radium
Heyman †	....	217	44	....	20.2	Radium
Doederlein	32.6	755	103	30.3	13.2	Radium and roentgen rays
Baisch	51.0	198	28	23.8	14.1	Radium and roentgen rays
Schmitz	17.5	103	15	50.0	14.6	Radium and roentgen rays
Johns Hopkins	52.1	387	102	46.5	26.6	Surgery
Stoeckel	70.6	350	98	35.4	26.6	Surgery
Graves	64.0	181	34	34.2	18.5	Surgery

* After Schmitz.
† Surg., Gynec. & Obst. **40**: 161 (Feb.) 1925.

6. We believe that we may do better for our patients if we rely on radium alone in view of our own statistics and those reported by other clinics.

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ABSTRACT OF DISCUSSION

DR. GEORGE GRAY WARD, New York: I purposely waited five years before quoting any figures from our clinic. At the last meeting of the New York State Medical Society, Dr. Farrar made a preliminary report on our work in which a discussion of the technic and action of the radium on the tissues and the clinical course observed in response to the radium was covered. We believe that the patients do better after irradiation if their resistance is previously fortified. Whenever possible we give a prophylactic blood transfusion before or at the time of irradiation. These patients are poor risks. They generally are anemic, and a considerable amount of toxin is liberated at the time of irradiation which makes it precarious for these patients, unless they have the resistance to combat it. We think that some of our results have been decidedly bettered by giving a prophylactic blood transfusion of 500 c.c. I wish to emphasize that personal follow-up and observation of the clinical course are very important factors in obtaining results. I do not believe that the best results can be obtained, however, with a uniform dosage for all cases, as the type of cell varies in different parts of the cervix, as I brought out in the discussion a year ago before this Association. We have noted a considerable difference in reaction in cases with apparently the same type of cell, so we can never be sure what the reaction is going to be. This constant observation by the surgeon in his follow-up is of importance because he can then judge of how the radium has affected the tissues. We expect where there is an

Intense hyperemia following the application of radium, with the patient still in the hospital, that a month later there will be considerable slough. Later, granulations form with subsequent cicatrization, characterized by pallor or anemia of the tissues, which is a very valuable guide as to the effect of the radium. If we see the patients in the follow-up during the course of their convalescence, we know what is taking place and we can repeat the irradiation whenever necessary to quench the fire which shows signs of rekindling, before it has gathered much headway. Many of our subsequent irradiations may be only with the needles in small recurrent nodules which show a beginning recrudescence. Among the operable cases treated by radium alone, with a moderate amount of radium, 52.1 per cent. of patients are living after five years; and, taking all classes of cases, 25.9 per cent. of patients are living. It seems to me, therefore, that the importance of the propaganda of education of the laity to seek relief early while they are in the operable class is very significant.

DR. HENRY SCHMITZ, Chicago: This report shows the true value of radiation therapy in carcinoma of the cervix. I can report 183 cases. In Group I cases, relative healing occurred in 80 per cent.; in Group II cases, 33 per cent.; in Group III cases, 11.8 per cent., a total of 189 cases with an absolute curability of 14.2 per cent. Excluding from these statistics the unconclusive cases, the percentage is 22.4. If we consider the results obtained in the clearly operable cases, the operability in our cases was only 16.9 per cent.; then we had thirty-one cases with fifteen five year headings, or 48.4 per cent. The conclusion is that radiation treatment, correctly applied, will probably give these patients a better chance for their lives than they possibly could obtain by operative procedures. I am more and more inclined to confine operation to the very earliest cases of carcinoma of the cervix.

DR. H. C. BAILEY, New York: I have used radium in a somewhat different way. In 1915-1916 I employed small doses, not exceeding 100 mg. Fifty patients, or 10 per cent., are well today. I have believed that in certain early cases only a small dose is necessary, but I had no idea that results such as Drs. Ward and Farrar have shown today could be produced with an amount of radium not exceeding 300 mg. for many years we have been crossfiring with success, but under some disadvantage, because this method takes a large quantity of radium and is, therefore, an expensive form of treatment; moreover, we cannot provide radium for all the patients that come to us. If our results can be improved by using smaller doses, a great deal has been accomplished. I think that these three year results will be reduced but slightly at the end of five years, because if a patient is well of cancer after three years it does not seem very likely that there will be any local recurrence.

DR. LILIAN K. P. FARRAR, New York: I wish to speak of the value of uniformity in classifying cases in order that the records in one clinic may be compared with those in another. The classification Dr. Schmitz has given is simple and adequate and if generally used would, I believe, allow better comparison of clinic records. Dr. Bailey spoke of crossfiring. We use radium needles and depend on them for crossfiring. We are using them more and more, and place them in the uterosacral ligaments or into the broad ligaments, as Dr. John Clark first advocated, using a finger in the rectum as a guide and placing the needles one on each side of the cervix, three-fourths inch from its outer margin and slightly posterior to a horizontal line drawn through the cervix to avoid injuring the ureters and blood vessels. Dr. Bailey spoke of the deaths in the three and five year series. There should not be such a great variation in the figures for three and five year cases of cancer were it not for the fact that we count every death as a death chargeable to cancer because it is impossible to make a dividing line as to what should be considered as a death due to cancer and what is caused by intercurrent diseases. We, therefore, include every death occurring after irradiation as a death due to cancer. That is where the difference comes in the three and five year figures, the cause not being entirely that the cancer has progressed.

A CLINICAL CLASSIFICATION OF BRIGHT'S DISEASES *

THOMAS ADDIS, M.D.
SAN FRANCISCO

One hundred years ago, Richard Bright [1] distinguished a small number of patients from all the others at Guy's Hospital by his discovery that their urine contained notable concentrations of protein. In this group he observed a significantly high incidence of edema and cardiac enlargement, but in general the symptomatology was quite variable and, with the exception of what is still too loosely called albuminuria, no clinical constant was found. But continuing to watch his albuminuric patients, he discovered, after their death, one other invariable feature. He established the fact that in every case gross structural abnormalities existed in the kidneys and that, although the renal lesions varied in outward appearance, they all alike were nonsuppurative and bilateral.

Today we still begin where Bright began with the observation that the urine contains protein, and we end where he ended with the study of the structural abnormalities in the kidneys and other tissues. We still find constant only the association of certain urinary and renal changes, and our minds are still as divided and uncertain as was his in regard to the question as to whether these patients are victims of one disease in various stages and intensities, or are suffering from different diseases of diverse etiology. The pathologist cannot give a quite decisive answer to this question. His observation is limited to one moment of time and that moment the last of life, when the original simplicity of the lesion is often obscured by terminal complications, or when the disease is so far advanced that little but fibrous tissue remains and the nature of the primary reaction can be only doubtfully surmised. The question is for the clinician who from day to day can watch the development of the disease from its beginning to its end.

In Bright's time there were no microscopes in the hospital, but if they had been available I believe he would have made a continuous series of observations on the characteristics of the urinary sediment from the first day on which he saw his patients until their death. Although the anatomist Henle [2] laid the foundation for such a study, and although several clinicians, particularly Bartels,[3] demonstrated the value of the method during the latter half of the nineteenth century, their work has not yet been carried to completion. Nowadays we delegate this work to laboratory technicians and so we have forgotten what our forefathers knew. And, also, we are skeptical of the value of observations that manifest so great a variability; for when we examine consecutive collections of urine from a patient we may find in one specimen many casts and red blood cells and in the next, few or none. It is probably this inconstancy that has led those who in our day have most studied Bright's disease to the opinion that in the past the value of the microscopic examination of the urine was overemphasized. Yet the idea that we might learn something important from a systematic and con-

* From the Medical Department of Stanford University Medical School.

* Read before the Association of American Physicians, Washington, D. C., May 5, 1925.

* This work was aided by the Wellington Gregg Fund for the Investigation of Bright's diseases.

1. Bright, Richard: Reports of Medical Cases, London, Longman, Rees, Orme, Brown and Green **1**: 67, 1827.

2. Henle, J.: Ztschr. f. rat. Med. **1**: 68, 1844.

3. Bartels, C. H. C., in Ziemssen's Cyclopedia of the Practice of Medicine, New York, William Wood & Co., 1877.

tinued study of the morphology of the urine remains attractive. It seems plausible that the urine from an actively inflamed kidney should carry with it formed elements which are characteristic of the process of inflammation, and that a kidney in which the lesion is in the main of a degenerative nature should yield a urine whose sediment is distinctive.

Acting on this hypothesis, I made a study of the effect of various physical factors on the formed elements of the urine. I found that hyaline casts and all casts whose matrix was hyaline disappeared from neutral sodium chlorid solutions when the salt concentration was reduced to less than 0.5 per cent. When the hydrogen ion concentration of the solution was varied, it was observed that the less the hydrogen ion concentration the greater was the concentration of sodium chlorid

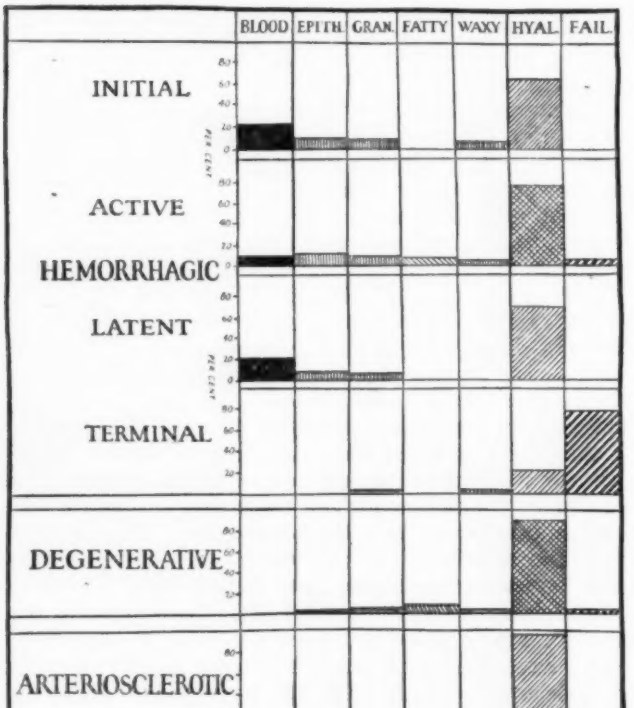

Chart 1.—Differential cast count.

necessary to keep the casts from dissolving. Now I had already noticed that those specimens of urine in which few or no casts were present were either dilute or alkaline or had both of these properties in lesser degree. It seemed likely, therefore, that variability was no inherent characteristic of cast formation, but might be the result of changes in the degree of dilution and reaction of the urine. This proved to be the case, since the variability was replaced by a satisfactory degree of constancy whenever the conditions were such as to induce the secretion of concentrated and acid urine. These requirements are usually met if the patient observes the rules outlined below.

THE METHOD

It is essential to secure the intelligent cooperation of the patient, and so written instructions are given to him and some time is spent in making sure that he fuliy understands what is required. He is asked to take his usual breakfast next morning, including his coffee, tea or milk, but is told that thereafter he must abstain from all fluids during the day and night until the urine has been collected on the following morning. Fluids are defined as all substances that can be poured from one vessel into another. In other respects his usual diet is left unaltered and he is specifically asked not to take more fruit than is customary, even though he may become thirsty. The urine has usually been collected between 6 p. m. and 6 a. m., because immediately after 6 a. m. the patient takes urea and large amounts of water in preparation for a test of functional capacity in which the measurements are made between 9 a. m. and 12 noon; but if only the sediment is to be studied, the collection may run from any convenient hour in the evening until the patient rises from bed in the morning. The only essential points are that the bladder should be completely emptied at the commencement and at the end of the collection and that the times should be noted exactly. Unless there is a considerable volume of urine in the bladder, it often does not completely empty itself, and so the patient is asked not to urinate during the afternoon of the day on which the collection is commenced, and to void the entire night urine when the collection is completed. There is no difficulty in this except for patients in the terminal stage, and in these it is inadvisable to restrict fluids unless certain dietary measures are first instituted. The time at which the collection is begun and the time at which it is ended must be written by the patient on a label on the bottle into which the urine is voided. It is always necessary to emphasize the point that the urine passed at the beginning must be discarded and not collected at all. The urine is passed directly into a wide necked bottle which has been thoroughly cleaned, washed with distilled water, dried in the inverted position, and finally rinsed out with clean solution of formaldehyd, which is allowed to drain out for a short time before the bottle is closed with a No. 10 rubber stopper. For cell counts in women catheterization is essential, and the nurse must take special pains to make sure that the bladder is really emptied, though even then the possibility of an incomplete collection must be remembered.

Early in the morning, the patient returns with the bottle of urine. It is almost always in a condition suitable for examination. Occasionally, however, it is neutral or alkaline and there is a precipitate of phosphates. If the salt concentration is not too low, hyaline casts may still be found after the urine is cleared by the addition of concentrated acetic acid; but as it is impossible to be certain that partial solution may not have occurred, cast counts are never made on such specimens, though the number of white blood cells and small round epithelial cells may be determined. Still more rarely there is a precipitate of urates, which must be dissolved by placing the bottle in hot water. After the volume of urine has been measured to within ± 2 c.c., the urine is returned to the collecting bottle, the rubber stopper is reinserted, and a thorough mixing is secured by repeatedly inverting the bottle. Immediately thereafter, 10 c.c. is transferred to a special graduated centrifuge tube with a diameter so narrow toward the tip that an accurate reading of small volumes may be made.[4] After centrifugalization of the tube for five minutes at 1,800 revolutions per minute, something may be learned from the appearance of the deposit. In normal persons there is about 0.2 c.c. of what seems to be mucus. In the initial stage of the condition described below as hemorrhagic Bright's disease, if the renal lesion is pro-

4. Convenient and accurately graduated tubes have been made for us by Messrs. Arthur Thomas & Co., Philadelphia.

nounced, there is a large amount of brown precipitate. In the active stage there are diminishing degrees of the brown color till in some cases it is imperceptible and the sediment is white. In the latent stage there is often no appreciable deviation from what is observed in normal urine. In the terminal stage there is no mucus, and so the cells and casts form a closely packed white deposit at the extreme tip, a circumstance that gives a quite characteristic appearance. In what has been called degenerative Bright's disease, no brown color is ever to be seen, and the amount of cloudy white deposit varies with the number of casts and epithelial cells. Differences are to be seen in the various subdivisions in this group, an excess of mucus, for example, in the degeneration associated with pregnancy, and a rather sparse white sediment from the urine of patients in whom there has been a long standing mixed infection in sinuses leading to dead bone. In arteriosclerotic Bright's disease there is simply the colorless mucus that is obtained from the urine of normal persons.

The greater part of the supernatant urine is now decanted and a part of the remainder is removed with a pipet until it is reduced to a volume whose magnitude will vary with the amount and nature of the deposit. In urines in which there is an appreciable concentration of protein, it will be observed that a precipitate appears at the surface of the urine as its meniscus approaches the narrowing tip of the tube. In such cases it is well to add a few drops of 1 per cent. sodium chlorid solution and again draw the fluid off until a convenient volume has been reached. It is assumed that all the casts and cells from the 10 c.c. sample of the urine are concentrated in the volume that has been selected, and an even dispersion of these elements is now secured by repeatedly drawing up and blowing out the fluid with a capillary pipet. A drop is then introduced into each side of a blood counting chamber, and the number of casts is counted under the low power over all the ruled areas. The area counted depends, of course, on the concentration of casts. In the urine of normal persons there are very few casts, and 10 drops have usually been examined. When casts are numerous, the deposit is diluted to from 1 to 5 c.c., and only 2 drops are counted over a known area. The cells are counted under a high dry lens and usually over unit areas of 0.1 sq. mm. It sometimes happens that the cells can be more conveniently enumerated in a larger volume than is suitable for the casts, and in such cases the sediment is diluted with salt solution to any required degree. The differential cast count is made, as a rule, while the casts are being counted; but, particularly in the latent stage of hemorrhagic Bright's disease, when the number of casts is small, it is best to obtain a more concentrated mixture by centrifugalizing urine pipetted from the bottom of the collecting bottle after it has stood still for an hour or more.

The calculations are rather cumbersome, but all arithmetical labor may be avoided by using a slide rule. In the form of blood counting chamber that is now in general use, the total ruled area is composed of nine large squares, each of which is 1 sq. mm. in area. Since the chamber is 1 mm. deep, the volume contained over the total ruled area is 0.9 c. mm., or 0.0009 c.c. If ten areas are gone over, the volume of urine in which casts are counted is 0.009 c.c. Suppose that in this volume ninety casts are found and that the volume of urine or salt solution in which the sediment was mixed was 0.9 c.c. In that case, $90 \times \frac{0.9}{0.009}$, which is 9,000, is the number of casts in 0.9 c.c. But all the casts in 10 c.c. of urine were concentrated in that 0.9 c.c. volume, so 9,000 is the number of casts in 10 c.c. of the urine. If the urine volume for twelve hours was 300 c.c., the number of casts in twelve hours is $9{,}000 \times \frac{300}{10}$, or 270,000. The same method of calculation is used in the cell counts. The general formula is as follows:

$$\text{No. counted} \times \frac{\text{Vol. in c.c. in which sediment was mixed}}{\text{Vol. in c.c. in which count was made}} \times \frac{\text{Vol. of urine in c.c. per 12 hours}}{10} = \text{No. in 12 hours' urine.}$$

The amount of protein is determined on the supernatant fluid obtained after centrifugalizing the urine. We use a method developed in this laboratory by Shevky and Stafford,[5] which is applicable even when the concentration of protein is low. The results are expressed as mg. for each twelve hours.

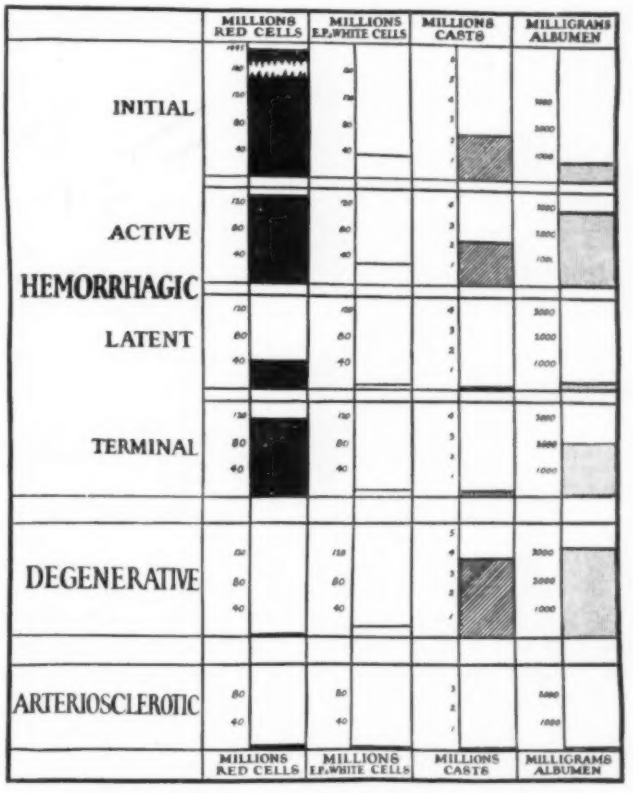

Chart 2.—Sediment and albumin (twelve hour urine).

Seven years ago, I began to make what might be called differential cast counts. Four years ago, the enumeration of casts was begun in urines collected under the conditions described above. During the last two years, the number of red blood cells and of white and small round epithelial cells has also been obtained. Each addition to the sum of quantitative data has strengthened a growing sense of lasting and deep lying divergences in the nature of the renal lesion in patients who on other grounds are sometimes indistinguishable, and a conviction that by this method it is possible for the clinician to follow the changes in the activity of the renal lesion in every patient from the beginning to the end.

THE CLASSIFICATION

In a rough preliminary way, Bright's disease in general may be defined as including all those conditions

5. Shevky, M. C., and Stafford, D. D.: Clinical Method for Estimation of Protein in Urine and Other Body Fluids, Arch. Int. Med. **32**: 222 (Aug.) 1923.

which are associated with the appearance in the urine of more than the usual amount of protein and more than the ordinary number of casts. The results that are presented in Charts 1 and 2 are the averages of 140 patients whose urine contained albumin and casts. They are an unselected and consecutively observed group of patients in that they include all those in whose urine complete counts were made and who were adequately investigated from a more general point of view. But patients with cardiac decompensation, patients with the slight albuminuria that often accompanies fever, and a few instances of what was believed to be "orthostatic albuminuria" were excluded. Finally, it should be noted that, as a rule, only patients with very definite albuminuria were referred for investigation, so that in all probability a large number of cases that would have been classified as "arteriosclerotic Bright's disease" were passed over. The undoubted numerical superiority of this group is not represented by the number I have examined.

The results of the examination of the urinary sediments of the patients who were investigated fall naturally, on qualitative as well as on quantitative grounds, into three main divisions; and since these divisions seem

DIVISION	SUBDIVISION	ETIOLOGY
HEMORRHAGIC	INITIAL → LATENT → HEALED; LATENT → ACTIVE → TERMINAL	STREPTOCOCCAL
DEGENERATIVE	CRYPTIC POISONS OF KNOWN CHEMICAL CONSTIT. PREGNANCY TOXEMIA TOXEMIA IN GENERALIZED INFECTIONS TOXEMIA IN FOCAL INFECTIONS TOXEMIA IN MIXED INFECTIONS	UNKNOWN " METALS, MALARIA, JAUNDICE TOXIN LATE PREGNANCY " PNEUMONIA, DIPHTHERIA " STAPHYLOCOCCAL SEPSIS " INFECTED TUBERCULOUS
ARTERIOSCLEROTIC		UNKNOWN

Chart 3.—Bright's diseases.

to be corroborated by many significant facts elicited by other methods of examination, I have become persuaded that they represent three diseases that are pathologically and etiologically distinct and separate. In order to avoid the confusion that would result from the use of terms that are familiar but have been used with a somewhat different meaning, I have reverted to a purely descriptive terminology and have called the first division hemorrhagic Bright's disease (seventy-one cases), the second degenerative Bright's disease (forty-three cases), and the third arteriosclerotic Bright's disease (twenty-six cases), as shown in Chart 3.

1. HEMORRHAGIC BRIGHT'S DISEASE

The first disease is the glomerular nephritis of the pathologists, but for clinical use I think that hemorrhagic Bright's disease is a better name. It emphasizes an outstanding and constant clinical feature of the condition, the presence of blood casts and of an abnormal number of red blood cells in the urine.

The initial stage is a sequel of streptococcal infections. It frequently escapes notice, but in its more severe forms the urine contains so many red blood cells that it has a mahogany brown appearance. When the copious flocculent precipitate is examined, it is found to consist in the main of lysed and distorted red blood cells, with a considerable admixture of pus cells and epithelial cells. Among this cellular débris there are casts that vary from lemon yellow to dark brown. Red blood cells can be seen incorporated in the matrix of those of lighter color, but in the majority only fused orange colored masses can be seen. These are the blood casts that are pathognomonic of hemorrhagic Bright's disease. In other respects the symptomatology is very variable, but there is usually a moderate increase in diastolic pressure and often a slight, generalized edema. When the streptococcal infection has run its course and has disappeared, as happens for instance in scarlet fever, there is a rapid subsidence in the activity of the renal lesion and ultimately a healing, with a defect that is compensated by hypertrophy.

The latent stage is probably due to the continuance of focal streptococcal infection. With the exception of the indications to be obtained from the sediment it is entirely latent, and even the urine may be passed as normal unless it is concentrated. I have had patients remain in this stage for periods of time up to ten years, apparently in perfect health, but always with an abnormally high number of red blood cells and a few blood casts. The very slowly progressive glomerular destruction is met by a steady compensatory hypertrophy.

The active stage sometimes follows the initial stage, or it may be the result of an exacerbation of the continuing streptococcal infection in a patient with latent hemorrhagic Bright's disease. After some time, a fatty degeneration of the tubule cells is apt to supervene. It is accompanied by an increase in the number of casts and in the rate of protein excretion, and by the appearance of fatty casts and of fat droplets on all the hyaline casts. In untreated cases there is general anasarca. If, as not infrequently happens, there is no increase in blood pressure, it is only by the large number of red blood cells and the finding of an occasional blood cast that the condition can be distinguished from what Volhard and Fahr [6] call "genuine nephrosis." With the disappearance of the infection the lesion may become latent and heal; with its continuance it will progress, either directly, or after an interval of latency, to the terminal stage.

As the terminal stage approaches, there is a gradual but very radical alteration in the nature of the urinary sediment. As one after another of the inflamed glomeruli become completely disabled and fibrosed so that urine no longer flows down their tubules, fewer red blood cells and pus cells come from the shrunken kidney, and blood casts are hard to find. When the amount of secreting tissue is decreased to less than one third of its original amount, the urea concentration of the blood begins to rise; and, as the kidney grows smaller and smaller, the blood urea concentration rises higher and higher until under its influence the small remnant of renal tissue is secreting a urine that is constantly dilute. Then nothing of what was previously found remains, and all the casts are renal failure casts.[7] It is often not until this stage is reached that the patient with hemorrhagic Brights disease comes under medical observation. He may tell us that he has always been strong and well until he noticed an unaccountable lassitude and weakness, or an unexplainable vomiting or a sudden dimness of vision. Sometimes he remembers a long past illness which might have been the initial stage of hemorrhagic Bright's disease; sometimes the history is clearer and more convincing; occasionally the transition from an active or latent stage has been observed and recorded.

6. Volhard, F., and Fahr, T.: Die Brightsche Nierenkrankheit, Berlin, Springer, 1914.

7. Addis, Thomas: Renal Failure Casts, J. A. M. A. 84:1013 (April 4) 1925.

2. DEGENERATIVE BRIGHT'S DISEASE

The second disease has been called degenerative Bright's disease because the constant and most prominent feature of the sediment is the large number of epithelial cells in various stages of granular or fatty degeneration. Unfortunately, in any urine many of the cells are so disintegrated that it is impossible to determine whether they were originally epithelial or white blood cells. I have therefore counted both of them together, but in doing so have not recorded a very evident distinction between degenerative and hemorrhagic Bright's disease, the preponderance of epithelial cells in the former and of white blood cells in the latter. However, the charts show the relatively small number of red blood cells, the heavy proteinuria, the large number of casts, most of which are hyaline sprinkled with fat droplets along with some epithelial, granular and fatty casts and, in terminal stages, renal failure casts.

Degenerative Bright's disease is not, like hemorrhagic Bright's disease, a unity, but is only a convenient term under which to comprise all those many pathologic conditions which may give rise to degenerative changes in the kidneys. They may be summed up under six headings.

1. In a number of patients, no cause for the condition has been discovered and this group has therefore been called cryptic degenerative Bright's disease. They are usually not seen until edema has developed, so that little is known of the initial stage except that it is apparently not related to any known or obvious infection or illness. The disease may pass through active and latent stages to complete recovery, or may gradually progress to a termination in uremia. In the active stages there is marked lipemia, and I have found that enormous doses of thyroid preparations may then be taken without producing any effect on the basal metabolism. The sediment results that have been charted are the averages from patients in this group.

2. There are some patients with degenerative Bright's disease in which we know the chemical constitution of the causative agent. Mercury, chromium and uranium salts are examples, and the degenerations seen in jaundice, and in some instances in malaria, might be included here.

3. The unknown toxin that is derived from the fetus in the latter half of pregnancy produces a degenerative Bright's disease which is accompanied by hypertension. In our experience, the renal lesion is not serious because it is so short-lived; but in patients who are allowed to remain in a toxic state for weeks or months, a lasting vascular damage may be produced which may ultimately lead to death.[8]

4. The toxemia that may accompany any generalized infection is apt to produce a slight cloudy swelling of the kidney. It occasionally happens that the degeneration takes an extreme form and is associated with much desquamation of renal cells, many epithelial and granular casts and much protein.

5. Focal infections are not often associated with any but minor grades of renal degeneration, but I have seen some patients with staphylococcal focal infections who have developed proteinuria and edema. This type has been recently described in children by Clausen.[9]

6. The mixed infections that are found in long standing osteomyelitis with sinus formation tend to produce the waxy kidney, and in some of these patients there is also a slowly progressive renal degeneration that may lead to uremia.

3. ARTERIOSCLEROTIC BRIGHT'S DISEASE

The third disease, arteriosclerotic Bright's disease, is of great importance because it occurs more frequently than any other form of Bright's disease. But so far as the kidney is concerned, its importance is of a negative character; for when the diagnosis has been made it is no longer necessary to consider the renal lesion as a factor in the management of the patient. These are the patients with hypertension who are often told that they are suffering from "chronic interstitial nephritis" and who consequently live in fear of death in a uremia that never comes.

Bright's disease in all its forms is always very much more than a disease of the kidneys, and no classification that is based only on the nature of the renal lesion can possibly be adequate. Vascular abnormalities and changes in other tissues are often more important than the structural or functional alterations in the kidney. But our clinical knowledge of these extrarenal lesions is negligible. We are only beginning to develop the exact and quantitative methods that are essential for the investigation of such changes, and as yet we can detect them only when they grossly deviate beyond the limits of our ill defined standards of normality. So, for the present, we must be content to use the knowledge of the alterations in the structure of the kidney that is given by a study of urinary sediments as a means whereby we may distinguish groups which in their nature are radically divergent, in the expectation that such differences in the pathologic condition of the kidney may be associated with a similar divergence in the nature of the changes in other tissues. But while acting on this hypothesis it must not be forgotten that the method has a very obvious defect. When a lesion in any part of a glomerulotubular element prevents it from forming urine, we are also prevented from learning anything about the lesion from the casts and cells in the urine. This is where determinations of the functional capacity of the kidney become valuable, for a loss of renal tissue may be ascertained by a measurement of function that is quantitatively related to the mass of still functioning renal tissue.[10] In spite of this defect in the sediment method, it nevertheless remains true that by enumerations of the formed elements of the urine repeated in the same patient from day to day, from month to month, and from year to year, we may gradually construct a clear picture of the genesis, the rise and fall, and, if fibrosis advances, the terminal diminution in the activity of the renal lesion; and, finally, the classification that grows out of such observations on the urine of different patients is, I believe, an advance toward a purely etiologic classification, the classification that must always remain the one toward which we strive.

CONCLUSIONS

1. The casts and cells of the urine may be examined and enumerated under conditions that preclude the variability induced by changes in the dilution and reaction of the urine.

2. The results obtained with this method, in conjunction with other clinical evidence, lead to the conclusion that three diseases, which are pathologically and etiologically distinct and separate, are included under the general designation Bright's disease.

8. Spalding, A. B.; Shevky, M. C., and Addis, Thomas: Am. J. Obst. & Gynec. **4**: 350 (Oct.) 1922.

9. Clausen, S. W.: Parenchymatous Nephritis, Am. J. Dis. Child. **29**: 581 (May) 1925.

10. Addis, Thomas: Renal Function and Amount of Functioning Tissue, Arch. Int. Med. **30**: 378 (Sept.) 1922.

LESIONS OF THE EXTREMITIES ASSOCIATED WITH DIABETES MELLITUS *

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It is a truism that persons with diabetes mellitus are prone to develop infection and that the feet are frequently involved. It is also well known that gangrene of the extremities is a common complication of this disease. These two factors, infection and arterial occlusion, produce in the extremity, and particularly in the lower extremity, a variety of lesions that it is important to recognize from the standpoints of prognosis and treatment. A series of fifty-two cases of diabetes mellitus with associated lesions of the extremities has been observed in the University Hospital during the last four years. The cases were unselected and represent 8 per cent. of all cases of diabetes mellitus seen during this time. This incidence is probably higher than would be found in ordinary practice. It is our purpose in this communication to analyze and classify the cases in this series and to discuss the diagnosis, prognosis and treatment of each class.

The subject is important because these lesions are a common cause of death in diabetes (20 per cent. according to Joslin [1]), and because there is often a vagueness in their diagnosis that leads to the institution of improper therapy. It has been common to group all these lesions as diabetic gangrene. A careful examination, however, will permit of the ready separation of these cases into distinct classes with important differences in prognosis and treatment. The general distribution of these classes is shown in Table 1, and other significant data are presented in Tables 2 and 3.

TABLE 1.—*Classification of Lesions*

Type	Number	Male	Female
Ulcer	8	0	8
Infectious	24	14	10
1. Soft parts	3	1	2
2. Osteomyelitis	11	7	4
3. Osteomyelitis, secondary gangrene	10	6	4
Gangrene	20	14	6
Uninfected	15	11	4
Secondary infection	5	3	2
Total cases	52	28	24

TABLE 2.—*Etiology*

Type	Average Age	Arteriosclerosis: Moderate	Arteriosclerosis: Marked	Varicose Veins	Average Weight at Onset of Diabetes, Pounds	Average Duration of Diabetes	Type of Diabetes
Ulcer	57.6	5	3	Usual	179	7.3 yr.	Mild
Infectious:							
Soft tissue	53.6	3	1	Rare	217	3.8 yr.	Mild
Osteomyelitis	52.0	8	3	Rare	206	7.6 yr.	Mild
Gangrene	59.3	1	8	Rare	196	11.8 yr.	Mild
Gangrene:							
Uninfected	64.6	0	15	Rare	210	12.7 yr.	Mild
Infected	61.0	0	5	Rare	210	9.8 yr.	Mild

As an outstanding fact, all the patients in the entire group had mild diabetes of long standing. In no case had there been adequate treatment, and glycosuria had been uncontrolled throughout the course of the disease. In fact, the very mildness of the disease was responsible for its neglect by both patient and physician. It was only with the advent of visible complications that the patients came for treatment. This furnishes a sound reason for the control of even the mildest diabetes.

It will be noted that nearly all these patients were obese at the onset of the diabetes.

CLASSIFICATION

All these patients presented lesions in the lower extremity, and none had significant lesions in the upper extremity. The cases fall logically into a definite classification based on the local findings.

1. *Ulcers.*—In this group are found intractable ulcers, usually on the lower leg and of the type commonly associated with varicosities. They vary in size and character with their chronicity. The infection present is mild and rarely spreads to the surrounding parts, although it may serve as a starting point for widespread infection. Of these patients, eight, all women, had ulcers that had not responded to local treatment. All of them had definite varicose veins, which were thought to be responsible for the ulcers. It is of interest to note that the knee-jerks were present in all but two of the patients. Under dietetic treatment, the ulcers healed promptly with a continuation of the same type of local treatment that had failed previous to the institution of the diet. One case failed to heal, that of a woman with a nonfilarial elephantiasis with ulceration which antedated the diabetes by twenty years.

TABLE 3.—*Clinical Examination*

	Fever	Leukocytosis	Anemia	Blood Pressure	Knee Jerks: +	Knee Jerks: −	Knee Jerks: ?	Roentgen Ray
Ulcer	0	0	0	Normal	6	0	2	Negative
Infectious:								
1. Soft parts	+ or 0	+	0	Low	4	0	0	Negative
2. Osteomyelitis	+	++	+	Low	8	2	1	Osteomyelitis
3. Osteomyelitis with gangrene	+	++	+	Low	4	4	1	Osteomyelitis and arteriosclerosis
Gangrene:								
1. Uninfected	0	0	0	High	11	2	2	Arteriosclerosis and bone destruction
2. Infected	+	++	+	High	2	2	1	Arteriosclerosis and bone destruction

2. *Infection.*—In twenty-four cases, infection was the initial event. The portal of entry was through some break in the skin, as an abrasion from a shoe, the trimming of a corn, a crack in a callus, all trauma of a minor nature in an unwashed foot. From here the infection spreads slowly or rapidly. The local picture presented at the time of the examination depends on the duration and extent of the infection and on the quality of the circulation. Three distinct groups can be recognized.

(*a*) Soft Tissue Infection: While there are only three of these cases in our series, it is probable that all twenty-four members of the infected class were originally in this group for varying lengths of time. These patients may have any type of infection, from small localized abscesses to a widespreading cellulitis. The circulation is adequate, and the local picture is that of infection in a nondiabetic person of low resistance. In all three cases, recovery followed incision and drainage

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* Read before the Section on Pharmacology and Therapeutics at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Joslin, E. P.: The Treatment of Diabetes Mellitus, Philadelphia, Lea & Febiger, 1923.

of the abscess combined with appropriate management of the diabetes.

(*b*) Osteomyelitis: These cases are common, eleven falling into this group. The infection occurs from the outside as an infection of the soft parts which progresses to an involvement of the bone. They may exhibit any degree of acuity and any amount of bone involvement, from necrosis of a single phalanx to destruction of all bones of the foot. The so-called perforating and trophic ulcers usually lead to necrotic bone, these being in reality sinuses communicating with osteomyelitis. That this is true is readily demonstrable by roentgenograms. The extent of bony destruction is often far greater than one would suspect from the superficial evidence.

TABLE 4.—*Infection of Soft Parts*

Case	Lesion	Operation	Result
1	Abscess of sole	Incision	Healed
2	Abscess of toe	Incision	Healed
3	Abscess of dorsum	Incision	Healed

It will be seen from Tables 2 and 3 that neither arteriosclerosis nor peripheral neuritis is an essential etiologic factor.

Local examination usually shows a swollen, hot, red, tender foot with one or more discharging sinuses. Pulsation is palpable in the dorsal pedis and posterior tibial arteries. The roentgenogram shows osteomyelitis of the phalanges and adjacent metatarsals, sometimes of the tarsals. The bones are involved in continuity. In mild cases the patient will have little general reaction; leukocytosis, however, is the rule with a temperature ranging from normal to 100 F. Even in the mild cases, the ability of the patient to utilize glucose is decreased by the infection, and dietetic control is more difficult than it was previous to infection. In the severe cases there is a marked general reaction with high leukocytosis, delirium and great prostration. The fever varies from 100 to 102 F., which is lower than would be expected from the other reactions of the patient. The diabetes is controlled only by the use of large doses of insulin. The results of treatment are shown in Table 4. It will be noted that the prognosis in this group is comparatively good, with only two deaths among the eleven patients. In a majority of cases with a localized process, a simple incision and drainage with removal of sequestrums results in a cure. This procedure should be done early to diminish absorption so that the diabetes may be more easily controlled. In this group, amputation is done only in those cases in which there is so much bone destruction that a useful foot cannot be obtained, or in those rare cases in which there is an overwhelming infection of the soft parts and death seems otherwise inevitable.

TABLE 5.—*Osteomyelitis*

Case	Lesion	Operation	Result	Comment
1	Metatarsals 2 and 3	None	No change	Discharged against advice
2	Phalanx	None	No change	Sinus, 2 years
3	Phalanges metatarsal	Amputation of toe	Healed	
4	Metatarsals 2, 3 and 4	Sequestrectomy	Healed	2 months
5	Metatarsals and tarsals	Sequestrectomy, drainage	Healed	
6	Metatarsals 2, 3 and 4	Sequestrectomy, drainage	Healed	
7	Phalanges	Amputation of toe	Healed	Insulin
8	Tarsal and metatarsal	1. Incision, 2. Sequestrectomy, 3. Amputation, thigh	Healed	Sepsis, insulin
9	Tarsal and metatarsal	Amputation of thigh	Healed	Sepsis, insulin
10	Tarsal and metatarsal	Incision, drainage	Died	11 days postoperative, pyemia; diabetes cont.; insulin
11	Tarsal and metatarsal	Amputation of thigh	Died	Advanced pulmonary tuberculosis; 4 days postoperative; diabetes cont.; metastatic abscesses

(*c*) Osteomyelitis with Gangrene: In this group, infection is present in a foot the circulation of which has been barely adequate. With the establishment of an active infection with its inflammatory reaction, the balance has been destroyed and the circulation further impaired to the point of abolition, and gangrene occurs. The sequence is: soft part infection, osteomyelitis, and an exacerbation of this infection with total occlusion of the sclerotic arteries. These cases present the same clinical picture as those of the previous group, except that advanced arteriosclerosis and gangrene are present. The infection is usually overwhelming and often generalized. It will be seen in Table 4 that the prognosis is poor. Delay is dangerous for several reasons. The continued absorption maintains a septic toxemia. Local spread of the infection is to be expected, and at any time septicemia and pyemia may supervene. In four of six fatalities in this group, a generalized infection was present before operation was done. In three of these cases, either septicemia or pyemia was present when the patient entered the hospital. Early operation might have prevented death. Patient 10 might also have survived if we had not tried conservative treatment first. The presence of infection converts mild diabetes into severe diabetes which is difficult to control even with insulin, and removal of the infection permits a return to the former state.

TABLE 6.—*Osteomyelitis with Secondary Gangrene*

Case	Lesion	Operation	Result	Comment
1	Tarsus metatarsus, foot	None	No change	Discharged against advice
2	Tarsal metatarsal, foot	Amputation at thigh	Healed	Insulin
3	Metatarsal, foot	Amputation at thigh	Healed	Insulin
4	Metatarsal, foot	1. Incision, 2. Sequestrectomy, 3. Amputation, thigh	Healed	Insulin
5	Metatarsal, foot	Incision and drainage	Died	11 days postoperative; insulin; pyemia
6	Metatarsal, foot	Amputation at thigh	Died	5 hours postoperative; insulin; septicemia; sugar and acetone free
7	Metatarsal-tarsal, foot	Amputatoin at thigh	Died	2 days postoperative; insulin
8	Metatarsus-tarsus, foot	Amputation at thigh	Died	2 days postoperative; insulin; septicemia
9	Metatarsus, foot	None	Died	Pulmonary embolus; insulin
10	Phalanges, foot	1. Incision, 2. Incision, 3. Amputation, thigh	Died	Progressive sepsis; 4 days postoperative; septicemia; diabetes controlled

The thigh is selected as the site for amputation because it is the lowest point at which healing is likely to occur, and because the patient is not in a condition to stand a series of anesthetics and operations.

3. *Gangrene.*—In this group are the patients with primary gangrene caused by arteriosclerosis. It pre-

sents two clinical types, depending on the presence or absence of secondary infection.

(*a*) Gangrene Without Infection: This differs in no way from senile arteriosclerotic gangrene in the nondiabetic patient. It is of the dry variety, beginning in the toes, more often in the great toe. Usually there is a period preceding the gangrene in which the foot shows evidence of a poor blood supply by cyanosis,

TABLE 7.—*Gangrene Without Infection*

Case	Lesion	Operation	Result	Comment
1	Foot	None	No change	Refused operation
2	Foot	None	No change	Operation not advised; age, heart
3	Toe	None	No change	Operation not advised; age, heart
4	Toe	None	No change	Operation not advised; age, heart
5	Foot	None	No change	Refused operation
6	Toe	Amputation of toe	Healed	
7	Toe	Amputation of toe	Healed	
8	Toe	Amputation of toe	Healed	
9	Toe	Amputation of toe	Healed	
10	Toe	Amputation of toe	Healed	
11	Toe	1. Amputation of toe 2. Amputation at thigh	Healed	
12	Foot	Amputation at thigh	Died	24 days postoperative; diabetes controlled
13	Foot	Amputation at thigh	Died	17 days postoperative; diabetes controlled
14	Foot	Amputation at thigh	Died	26 days postoperative; diabetes controlled; sepsis
15	Toe	1. Amputation of toe 2. Sequestrectomy	Died	55 days postoperative; pulmonary embolism; diabetes controlled

coldness and sometimes pain. Dry gangrene follows, progressing slowly to the establishment of a line of demarcation. Besides the local gangrene, examination shows advanced generalized arteriosclerosis. Symptoms of sclerosis of the cerebral arteries are frequent. The radial and brachial vessels are tortuous and beaded. The aorta is dilated, and myocardial insufficiency is often present. Locally, no pulsation can be felt and roentgenograms show calcification of the vessels of the leg and foot. Fever and leukocytosis are absent.

Surgical treatment may be delayed until the diabetes is controlled, but the patient eventually comes to operation. In our experience there are two sites at which amputation may be successful. In those cases in which there is gangrene of a toe with a sharp line of demarcation distal to the plantar arch, amputation of a toe usually is successful. The amputation must be done without trauma, no closure attempted, and the wound allowed to heal by granulation. Of course, gangrene of other toes may occur at a later date. If the gangrene extends into the foot either primarily or following a toe amputation, a thigh amputation should be done. It should be emphasized that the sclerosis involves the entire arterial tree, and dissections of amputated legs have shown that the narrowest part of the vessel is often in the first part of the popliteal arteries. Amputations through the leg usually fail to heal because of sloughing of the flaps and are not worth trying. The mortality of this group in which thigh amputation is necessary is high, but in our fatal cases death did not occur immediately from shock or coma, but after a lapse of some weeks. It was difficult to assign a specific cause of death to some of the patients; there was loss of appetite, and they gradually grew weaker and died. It resembled a death from arteriosclerosis. The diabetes is always readily controlled in this group.

(*b*) Gangrene with Infection: In this group the dry gangrene is the initial lesion. Infection occurs later, with immediate rapid spread of the gangrene. The clinical picture eventually becomes that of the group in which infection was the primary lesion with the gangrene appearing secondarily. These combinations of infection with gangrene are, when well established, both gangrene of the moist type. The evidence of arteriosclerosis is the same as in the uninfected gangrene, of which this group originally formed a part. There is no single type of gangrene peculiar to diabetes; as stated by Achard,[2] "There is gangrene in the diabetic but not a diabetic gangrene." As seen in Table 8, the prognosis is grave. The infection and gangrene are progressive, and amputation through the thigh offers the only chance of cure. The progressive nature of the lesion necessitates early operation. At this stage the lesion and treatment are the same as in gangrene secondary to infection.

COMMENT

The importance of differentiating these lesions of the extremities is clear. The tendency to regard all lesions of the feet in diabetic patients as gangrene undoubtedly leads to amputation of many feet that could be saved and made useful. The majority of our patients with osteomyelitis and infection of the soft parts were discharged with good function after comparatively minor operations. If there is limited gangrene without infection, prompt operation is not imperative and at times a local operation will give a fair functional foot. If, however, there is present severe infection with loss of the circulation, haste is imperative and thigh amputation done early offers the only hope of a successful result.

In all cases of diabetes and complicating lesions of the extremities, it is obvious that the diabetes must be controlled in order to promote healing and prevent death from coma. Only one patient in the entire series died in coma, and this death occurred before insulin was available. Many of the patients, especially those with severe infections, would have died in coma if insulin had not been used. Insulin has its chief value in those patients with severe infections who have lost their tolerance because of the sepsis. It prevents their death in coma and makes it possible to keep them sugar

TABLE 8.—*Gangrene with Infection*

Case	Lesion	Operation	Result	Comment
1	Foot	Amputation at thigh	Healed	Insulin
2	Toe	Amputation of toe	Died	Insulin; diabetes controlled; 16 days postoperative; septicemia
3	Foot	Amputation at thigh	Died	Insulin; diabetes controlled; 25 days postoperative; stump healed; decubitis
4	Foot	Amputation at thigh	Died	Diabetes controlled; 23 days postoperative
5	Foot	None	Died	Pneumonia

free. Since freedom from glycosuria is essential to healing, this is important. It is a mistake to believe that the use of insulin removes all danger of death in these cases. It does prevent death from coma, but it maintains life in a person with low resistance, damaged vital organs, and of advanced age, in whom complications of sepsis and new infections are likely to occur. The prognosis must still be considered grave in diabetic patients with any type of gangrene.

In the members of this series without infection, the diabetes is so mild that liberal maintenance diets can be given unaided by insulin without glycosuria.

2. Achard, M.: Les gangrenes des diabetiques, J. d. Pract., April 19, 1924.

The importance of prophylactic measures directed toward improving the hygiene and circulation of the feet is clear and has been recognized for years. It cannot be emphasized too much, however, that the chief prophylactic measure is the rigid control of the diabetes even in those suffering from its mildest form.

The importance of the choice of an anesthetic is well known. On all of these patients we have used spinal anesthesia or one of the gases, either nitrous oxid and oxygen or ethylene. Local anesthesia should not be used in the cases in which there is arteriosclerosis because of the danger of decreasing the already poor blood supply.

SUMMARY

1. Not all lesions of the extremities associated with diabetes mellitus are gangrene.
2. A recognition of the type of lesions gives a more accurate prognosis and rational treatment.
3. These lesions occur in untreated diabetic patients with mild types of the disease, and their occurrence gives reason for the rigid control of all cases of mild diabetes.
4. The use of insulin aids treatment of the types with infections by preventing coma and abolishing glycosuria.
5. The prognosis is still grave in the group in which there are both impaired circulation and infection.

ABSTRACT OF DISCUSSION

DR. E. P. JOSLIN, Boston: What impressed me was the fact that Dr. Coller struck at the vital point in these cases, namely, the avoidance of procrastination. One cannot operate on these patients too soon. An infection, if it is that type we are dealing with, makes any diabetes worse, and the best aid for the improvement of the diabetes is to get rid of the infection, so that we must be ready to operate at the earliest possible moment. In the second place, one must not be afraid to operate on these patients, because they will do very well even though the outlook promises to be poor. At this moment there is in a New England hospital a woman who had hemiplegia. Two days after the onset of the hemiplegia she developed gangrene in the right leg. A thigh amputation was done and she is doing remarkably well. Not only has the stump healed but the hemiplegia is gradually getting less. Even in a case of this sort, it is worth while to operate. Septicemia occurs quite commonly. One must remember that, but never wait to make a diagnosis of it. Protect the surgeon if you like by making blood cultures at once when the patient enters the hospital, but operate if there is any chance at all. I did not hear what the speaker said was employed as an anesthetic in these cases. McKitterick, working with Dr. Johns and Dr. Leigh, has had a large number of these cases and he has used spinal anesthesia almost exclusively.

DR. FREDERICK A. COLLER, Ann Arbor, Mich.: It is very gratifying indeed to have Dr. Joslin confirm our belief in the advisability of early operation. I did not say anything about anesthetics because that subject has been pretty well thrashed out. We have used only two types of anesthesia in this group of cases; spinal in a large number of them; but for the minor operations and during the past year I have used ethylene and oxygen entirely with satisfaction. At the present time I am using it entirely. Of course, we do not fear death from coma. I think chloroform, ether and local anesthesia are bad in these cases. Our idea in putting forward this classification was that by following this classification, we have been able to decide early what line of treatment must be adopted, and we have decided, as Joslin has pointed out, that infection in all those cases requires that we cannot operate too soon. In the cases of dry gangrene, without infection, we can take our time. In those cases in which there is circulation, with a local infection, we can save the foot and usually send the patient out without the mutilation that I am sure we, ourselves, used to do amputating in a case that did not need amputation.

TREATMENT OF PERTUSSIS BY ROENTGEN RAY

AN ANALYSIS OF EIGHT HUNDRED AND FIFTY CASES *

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This paper represents an attempt to summarize the outstanding clinical and laboratory findings in 850 cases of pertussis treated by the roentgen ray and observed through the whooping cough clinic of the Boston Floating Hospital. It supplements the original 300 cases reported last year by one of us.[1] In presenting the statistical data, the entire group is utilized, as far as possible, but in certain phases of the work only the supplementary cases are given in detail, as the records and laboratory data are complete only in this group. That the roentgen ray has a real place in the therapeutic armamentarium for whooping cough can be attested not only by our own experience, but by reports from other parts of the United States,[2] from Canada,[3] and from several European clinics.[4]

There are certain points which have been brought out as the study has progressed. It has been interesting to note that, as the knowledge of this means of treatment has spread among both the laity and the profession, the patients have been presenting themselves earlier in the disease, with the result that less marked pulmonary changes have been noted roentgenologically. In this respect, particularly, the incidence of pneumonia complicating the whooping cough has been notably lower than in the original series, in which the patients tended to come for treatment well after the paroxysmal stage had developed.

For purposes of brevity and convenience, the discussion of the statistical findings will be taken up in topical form under the more important headings.

AGE INCIDENCE

It is obvious that whooping cough is a disease of infancy and early childhood. Of the 850 cases, 750, or 88.2 per cent., occurred under 7 years of age, and 260, or 30.5 per cent. of this group, were in infants under 2 years of age. It is a fallacy to presuppose a natural immunity to whooping cough in early infancy, as can readily be observed in a study of these cases, as seventy-two occurred in infants under 6 months of

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* From the Boston Floating Hospital.

* Read before the Section on Diseases of Children at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Bowditch, H. I.: Further Notes on the Treatment of Pertussis by the Roentgen Ray, J. A. M. A. **82**: 1422 (May 3) 1924.

2. Kingston, J. J., and Faber, H. K.: Notes on the Roentgen-Ray Treatment of Whooping Cough, California State J. Med. **21**: 429-430 (Oct.) 1923. Smith, M., and Kirby, A. C.: Use of X-Rays in Treatment of Pertussis, J. Arkansas M. Soc. **21**: 143-146, 1924.

3. Struthers, R. R.: Roentgen-Ray Treatment of Pertussis, Canadian M. A. J. **14**: 141-142 (Feb.) 1924.

4. Boner, L.: Radiotherapy of Whooping Cough, J. de radiol. et d'electrol. **8**: 509 (Nov.) 1924. DePuelles, Jose M. L.: Roentgenotherapy in Treatment of Pertussis, Arch. España Pediat. **8**: 614-615 (Oct.) 1924.

age, with ten definite cases noted in infants under 2 months of age. This fact seems of considerable significance from the point of view of developing preventive measures, as the greatest mortality is well recognized to be in the younger age group. It is also interesting to note that while whooping cough ordinarily confers a permanent immunity, like scarlet fever, typhoid and other infectious diseases, a second infection may occur, and three such cases can be found among adults in this series, in which there was a very definite previous history of whooping cough in childhood, with the second infection usually contracted from a child in the family.

TABLE 1.—*Relation of Age of Patients to Stage of Disease on Admission*

Period of Disease in Weeks	0-2	2-3	3-4	4-5	5-6	6-7	7-8	8-9	9-15	15+	Totals
1.....	7	9	5	3	5	5	2	2	3	1	43
2.....	20	23	25	13	9	10	5	3	7	3	118
3.....	22	19	32	19	23	14	16	4	2	2	153
4.....	34	25	16	11	14	16	13	6	11	2	148
5.....	20	18	13	9	13	17	11	4	4	0	109
6.....	21	7	5	9	10	5	8	2	1	3	71
Over 6.....	39	20	18	17	14	17	8	10	4	6	153
Unknown....	12	9	8	9	9	4	0	1	1	2	55
Totals.....	175	130	122	90	97	88	64	32	33	19	850

SEASONAL INCIDENCE

Figure 2 illustrates the well known fact that the height of the disease seasonally occurs in the early spring at about the peak of the curve of upper respiratory diseases. It is exaggerated in this chart, however, because the months of December, January, February and May represent a period of two years, and March and April cover three years. However, even after dividing by the necessary figure, 2 or 3, March and April still represent a very definite and sharply defined peak, with an average of nearly twice as many cases as in any other month of the year.

Thus we see that climatic conditions play an important part as accessory factors in producing disease. This is borne out by the observations of one of us that whooping cough in the tropics is of comparatively rare occurrence and usually of a very mild type, most cases probably passing undiagnosed.

DURATION ON ADMISSION

Table 2 brings out the point mentioned in the introductory paragraph, that there has been a very marked tendency for patients to appear earlier for treatment. This observation is lost in Table 1, which is inclusive of the entire series of 850 cases.

The relation of age is of particular importance in interpreting the results of treatment, especially the blood findings, the normal variation in the differential blood count at different ages is so marked. Furthermore, it emphasizes the fact, which we have already recorded, that the treatment benefits the patients about equally, regardless of the stage of the disease, in reducing the severity and the number of the paroxysms.

SYMPTOMATOLOGY

In regard to the symptoms on admission, the additional series of 550 cases shows no essential differences in the incidence of the various pathognomonic symptoms. These are chiefly the presence of a paroxysmal cough, usually accompanied by a definite inspiratory difficulty, terminating in the characteristic whoop, cyanosis and vomiting. In addition to these cardinal symptoms, some of the more severe cases presented other less commonly found symptoms—epistaxis, conjunctival hemorrhage, hematemesis, melena and, occasionally, convulsions.

In the entire group of 850 patients, there have been fourteen who have had convulsions. These were all infants, all but two being under 8 months of age. One of the group was moribund on admission. The other thirteen have been among the most dramatic in the results of the treatment. Always within twenty-four hours, and usually within from six to eight hours, the convulsions ceased.

This raises a point of clinical interest. In the German literature, particularly in a paper by Gottlieb and Möller,[5] it seems to be generally held that patients with whooping cough who develop central nervous symptoms with actual convulsions rarely recover. This has not been our experience, and the use of the roentgen ray as a therapeutic agent in the treatment of these cases alone seems entirely to justify its place in therapeutics. The question as to the etiology of the convulsions in these cases is of theoretical and possibly of practical importance. Can they be considered as directly due to the toxic action of the products of *Bacillus pertussis* acting on the central nervous system, or are they a manifestation of a latent tetany lighted up by the infection? Is the benefit derived from a similar ionization of the combined calcium of the blood serum as results from the treatment of tetany by the ultraviolet ray, or is it simply a mechanical result diminishing the degree of congestion around the tracheobronchial lymph nodes, thus reducing the reflex nervous response of the autonomic system? In this regard it is to be regretted that these studies did not include calcium determinations of the blood serum, as only in this way can this question be definitely answered. At all events, it opens up a new line of thought in regard both to the mechanism of the treatment and to the etiology of the convulsions complicating severe whooping cough in infants.

BACTERIOLOGY

These studies have confirmed the observations of a number of other workers in whooping cough. The most important bit of knowledge derived is that the infectious period of whooping cough is in the catarrhal stage and that it diminishes very rapidly after the actual paroxysmal period begins. In our work we have found no positive cultures after the second week of the whooping, which represents approximately the fourth week of the disease. This fact, we feel, is of great importance for the following reasons: In the first place, if it is true that whooping cough is infectious only for this comparatively brief length of time, then the fallacy of prolonged quarantine over six to twelve weeks, as is being carried out by various local boards of health, is apparent. In the second place, if it *is* true, then early diagnosis of whooping cough is possible bacteriologically, as has been

TABLE 2.—*Summary of the Two Series*

Disease Period	Under 2 Weeks	Second Week	Third Week	Fourth Week	Fifth Week	Sixth Week	Over 6 Weeks	Unknown
First 300 cases...	0	4	20	26	33	47	123	47
Present 550 cases	43	114	133	122	76	24	30	8
	43	118	153	148	109	71	153	55

5. Gottlieb K., and Möller, B.: Whooping Cough in Infants, Jahrb. f. Kinderh. **100**: 222-236 (Dec.) 1922.

shown by Madsen,[6] Meyer,[7] and their co-workers in Copenhagen. With early bacteriologic diagnosis carried out efficiently by the local boards of health in the same way that it is in the case of diphtheria, typhoid and other infectious diseases, it will be possible to maintain a real quarantine for this brief period of approximately three weeks, which is not possible now with the long theoretical quarantine period. That this long quarantine is a quarantine in name only is borne out by our observations from the histories of the presumptive source of the infection in our cases.

TABLE 3.—*Average Lymphocyte Count*

Age	On Admission (378 Cases)	One Week's Treatment (157 Cases)	Two Weeks' Treatment (153 Cases)
0 - 6 months	17,175	15,400	10,250
6 -12 months	19,035	18,300	12,700
1 - 2 years	17,900	17,200	12,300
2 - 3 years	17,950	16,600	11,400
3 - 4 years	16,450	15,300	11,500
4 - 5 years	15,600	13,900	10,000
5 - 6 years	15,400	14,300	9,500
6 - 7 years	14,700	15,300	9,800
7 - 8 years	16,375	14,900	8,700
8 - 9 years	15,825	9,000	9,000
9 -15 years	14,025	10,800	9,250
Average of foregoing averages	16,411	14,636	9,491

The intensive bacteriologic diagnosis has been attempted during the past winter in only approximately 300 cases. In the seventy-seven cases of this group occurring in the first two weeks of the disease, we have secured positive bacteriologic diagnosis in practically 60 per cent. If, however, we subtract the twenty-three cases seen in the first week of the disease, it raises the percentage to a little better than 80 during the second week, which is apparently the most infectious period. In the seventy-five cases seen in the third week, the percentage falls to just under 30, and in the forty-four cases examined during the fourth week, two, or less than 5 per cent., were positive. For this reason, bacteriologic diagnosis has not been attempted during the last few months in any but the early cases. Our earlier results were comparable to these figures, but the bacteriologic diagnosis was made only irregularly because of inadequate technical assistance.

HEMATOLOGY

In discussing the differential diagnosis of whooping cough, the question of blood examination is of primary importance. We have available a large number of figures that represent the total white count and the differential polymorphonuclear and lymphocyte counts on admission, at the end of one week, and two weeks after treatment. It is difficult to interpret these without considering them both from the duration of the disease when first seen and the age of the patient, as the normal differential lymphocyte count shows a progressive decrease during the age period when whooping cough predominates. As the differential lymphocyte count is the most important single hematologic finding in making our diagnosis, its interpretation, dependent on these two facts, is somewhat difficult. We have seen extremes in these cases, one of which caused considerable anxiety as to the possibility of its being lymphatic leukemia, as the total white count was just under 100,000 per cubic millimeter, and the differential count 98 per cent. small lymphocytes. The diagnosis of leukemia was excluded only by following the blood picture of this case during the course of the disease and finding it fall to normal as the infection subsided.

As has been shown in a previous paper,[8] the lymphocyte count shows both an absolute and a relative increase, which reaches its maximum about the third week of the disease and then slowly returns to normal. The importance of the blood smear examination was emphasized last year by Heiman,[9] at the annual meeting of the American Pediatric Society. Our figures are of interest in showing the effect of irradiation in bringing this return to normal much earlier. Space does not permit the including of the entire tables giving the total and differential count, but Tables 3 and 4 bring out the essential points.

The average lymphocyte count for all the cases on which we have the data at the time of admission was 16,411. The differential lymphocyte count for the same period was 58.1 per cent. Following treatment, it will be noted from the tables that there was in almost every instance, within a week, a definite reduction in both the total number of lymphocytes and their relative percentage. This is more noticeable in the older age groups, and the actual percentage value of the differential lymphocyte counts in young infants is of comparatively little value from the standpoint of differential diagnosis. However, even in this group it will be noted that the total lymphocyte count is increased to nearly double normal.

Also in regard to the diagnosis of whooping cough by blood studies we have begun to accumulate sufficient data to feel that complement fixation can be of value in the doubtful cases, as it has been positive by the third week of the disease in all the cases in which it has been attempted. This alteration of the serum apparently is only of transient duration, as even two or three weeks after the disease is clinically cured the degree of positive reaction of the serum is definitely diminished. So far we are not in a position to state how long the reaction persists; but it seems as if there must be some permanent alteration of the serum, as the immunity apparently is effective throughout life, except in very rare cases.

TABLE 4.—*Average Percentage of Lymphocytes*

Age	On Admission per Age Group (378 Cases)	One Week After Treatment (157 Cases)	Two Weeks After Treatment (153 Cases)
0 - 6 months	64.2	62.6	60.0
6 -12 months	66.0	64.0	55.5
1 - 2 years	68.5	63.0	52.0
2 - 3 years	63.5	55.0	45.0
3 - 4 years	54.0	52.5	41.0
4 - 5 years	60.0	49.0	46.0
5 - 6 years	54.0	47.0	46.0
6 - 7 years	53.0	45.0	39.0
7 - 8 years	52.5	37.0	37.0
8 - 9 years	56.0	35.0	25.0
9 -15 years	48.0	40.0	35.0
Average of foregoing averages	58.1	50.1	43.77

ROENTGENOLOGY

The value of the roentgen-ray examination of the chest has been emphasized in a previous paper by one of

6. Madsen, Thorvald: Whooping Cough: Its Bacteriology, Diagnosis, Prevention and Treatment, Boston M. & S. J. **192**: 50-60 (Jan. 8) 1925.

7. Meyer, A. H.: Researches on Whooping Cough in the State Serum Institute, Ugesk. f. Læger **83**: 523 (April 21) 1921; Laboratory Diagnosis of Whooping Cough at Serum Institute of State, Acta. Pediat. **1**: 99 (March) 1921; Laboratory Tests for Pertussis, ibid. **1**: 99, 1921; Bacteriology of Whooping Cough, Ugesk. f. Læger **83**: 523 (April 21) 1921; Report of Mme. Chievitz and Dr. A. H. Meyer, Copenhagen, Ann. de l'Inst. Pasteur **30**: 503, 1916.

8. Bowditch, H. I.; Leonard, R. D., and Smith, L. W.: Studies on the Roentgen-Ray Treatment of Whooping Cough, Am. J. Dis. Child. **28**: 322-328 (Sept.) 1924.

9. Heiman, H.: The Clinical Value of the Routine Examination of Blood Smears in the Diagnosis of Pertussis, Arch. Pediat. **41**: 385 (June) 1924.

us.[10] There are definite pathologic changes associated with pertussis. These differ in certain essentials from the generally accepted picture of chronic bronchitis. The lesion consists of a peribronchial thickening, which is most marked in the descending branches of the bronchial tree and especially in the mesial portions of the lower lobes. There is an accompanying enlargement of the mediastinal tracheobronchial lymph nodes, which is not quite the same in distribution as that noted in bronchitis of other causation. In addition, there is frequently a mottling of the lung shadow suggesting a beginning infiltration or bronchopneumonia. For convenience, in computing our statistics, we have classified these changes into three groups, depending on their degree.

This is best illustrated, perhaps, by Figure 3, which characterizes the three rough roentgenologic groups into which the cases fall. The first consists of a simple peribronchial thickening of a comparatively slight degree. Class 2 consists of cases showing the same process more advanced, and Class 3, those in which there is beginning lung infiltration.

The German literature[5] emphasizes another point which we have not noted with any degree of regularity. It speaks of an unusually steep slope to the diaphragm. This is explained as being the result of a reflex nervous mechanism associated with stimulation of the diaphragmatic branches of the phrenic nerves. It is asserted that this occurs early in the disease; but in our experience it has not been noted until the paroxysms have definitely appeared, and then only rarely. We feel that when it is present it is an additional diagnostic point, but that its absence is by no means of significance in eliminating the possibility of whooping cough as a diagnosis.

DIAGNOSIS

From the foregoing discussion, it is apparent that diagnosis can be readily made even in the absence of typical whooping. This is particularly true in the late catarrhal period, when the infectiousness is at its height. The chief points of differential diagnosis are based, first of all, on the clinical history of known exposure and a cough persisting for a longer period than the usual upper respiratory infection. In the second place, a positive bacteriologic diagnosis is absolute, as it is in typhoid, diphtheria, tuberculosis, etc., except possibly in a small group of patients who are potentially "carriers." In whooping cough, however, the carrier is probably not of great importance, as the organism is very readily destroyed and apparently is infectious only in rather large doses. In the third place, an increase of lymphocytes, either relatively or absolutely, and usually both, is of great significance; and, finally, the roentgenologic examination is of great help in establishing a diagnosis.

TREATMENT

The treatment of these cases has fallen into two main groups. First, the series treated by roentgen ray alone, and, second, a group given combined vaccine and roentgen-ray therapy. There is a small series of controls which have not received treatment. This has been a difficult group to secure, as our cases have presented themselves very definitely for roentgen-ray treatment. It is possible to utilize other reported series of cases, notably those of Herrman and Bell[11] and of Luttinger[12] in New York, and of Bloom[13] in New Orleans for this aspect of the work. These give a definitely longer average duration for the disease than we have noted.

We have adhered closely to our original technic in spite of reports from other places suggesting increasing the dose and intervals. We use as a routine the ordinary high tension transformer, with a rectifying device, a Coolidge tube, and a frequency of 60,000 volts. We keep the tube set at 4 milliamperes. We use 1 mm. of aluminum as a filter, and keep the tube distance constant at 28 inches. For children under 1 year of age the total dosage is 12 milliampere minutes given anteriorly the first time and posteriorly the second, and alternating in the same way for subsequent treatments. For children from 1 to 2 years of age we have increased the dosage to a total of 24 milliampere minutes divided equally anteriorly and posteriorly. For children from 2 to 5 years of age this is increased to 32 milliampere minutes similarly given in divided doses, anteriorly and posteriorly. For older children, a total of 40 milliampere minutes has been used. In a small group of specially selected severe cases, more intensive treatment has been employed. The tube distance has been decreased to 15 inches, and by means of small cones the lung hyla have been treated locally, both anteriorly and posteriorly, with 16 milliampere minute doses, a total of 64 milliampere minutes being given. Practically no difference in results has been obtained by these larger doses. The treatment has been given on alternate days for three doses, followed by an interval of one week, when one or two additional treatments have been given at the same interval. In particularly recalcitrant cases, an additional series has been administered.

The effects of the treatment have confirmed in general the earlier results. Roughly, 80 per cent. of the cases have shown a definite diminution in the number and severity of the paroxysms in a time interval ranging from a few hours to a week or ten days. In some of these cases the clinical benefit has been extraordinary. This is particularly true of the group of infants with convulsions, as noted previously. In general, we think it is safe to conclude that the younger patients in the early paroxysmal stage show the most striking benefit. The next group in which the results are most striking is that in which the paroxysms have persisted for a considerable period of time. In this respect the treatment is not specific, as similar benefit has been reported recently by Friedman[14] in the treatment of chronic bronchitis. It is interesting, however, that in his series of cases the best results were obtained in the post-pertussis type of persistent bronchial irritation. This benefit is shared about equally by the various age groups, although it is perhaps true that the younger patients do a little better. It does not seem necessary at this time to go further into statistical detail.

In the second group, consisting of approximately 150 patients who received both roentgen ray and vaccine, the percentage of patients benefiting seems to be practically the same, but the degree of benefit seems to be more marked, and the duration of the paroxysmal stage seems to be reduced more by this combined method of treatment than by roentgen ray alone. This is, of course, a very difficult thing to prove, as we have to rely almost entirely on historical evidence except to a limited extent on the interpretation of the roentgen-ray findings.

10. Leonard, R. D.: Use of Roentgen Ray in Pertussis, Am. J. Roentgenol. **11**: 264-267 (March) 1924.
11. Herrman, C., and Bell, T.: Study of Three Hundred Cases of Pertussis in a Hospital, Arch. Pediat. **41**: 13-28 (Jan.) 1924.
12. Luttinger, P.: Vaccine Therapy as Routine Treatment in Whooping Cough, New York M. J. **109**: 322 (Feb.) 1919.
13. Bloom, C. J.: Vaccine Therapy: Most Rational and Effective Method of Treating Whooping Cough, Arch. Pediat. **36**: 1 (Jan.) 1919; Most Rational and Effective Method of Preventing Whooping Cough in Public institutions, New Orleans M. & S. J. **73**: 426 (April) 1921.
14. Friedman, L. J.: X-Ray Therapy of Chronic Cough in Children, Arch. Pediat. **42**: 208-210 (March) 1925.

In both groups the treatment results, by the end of the second week almost invariably, and in many instances by the end of the first week, in a definite reduction of the size of the hilum lymph nodes and of the peribronchial thickening. This seems to parallel quite closely the clinical course of the disease, and it has been interesting to see how closely the roentgenologic interpretation of the chest films coincides with the history and physical findings of these cases. Certainly more than 80 per cent. of the roentgen-ray readings check almost exactly the clinical condition of the cases.

PROPHYLAXIS

We have commented on the use of pertussis vaccine in the treatment of the disease. In this regard it is perhaps worth mentioning that the vaccine which we have used was one made in our own laboratories. We have a very definite feeling that the discrepancies that have resulted in the literature concerning the value of pertussis vaccine prophylactically as well as therapeutically are the result very largely of the organism utilized in making up the vaccine. The ordinary commercial vaccines that we have had available have not shown an agglutination titer of more than 1:400 when inoculated into rabbits. In the same way, most of the strains of pertussis that we have secured from actual cases have similarly shown a low agglutination titer experimentally. However, a certain number of cases have resulted in the isolation of an organism capable of producing strongly positive macroscopic agglutination in dilutions as high as 1:3,200. From one of these strains a vaccine has been made which likewise has been concentrated so that it had a bacterial count of between five and six thousand million per cubic centimeter, approximately three times the concentration of the usual commercial vaccine. This represents therefore theoretically twenty-four times the efficiency of a stock vaccine in producing antibodies in the blood serum. It is not likely that such a quantitative result is possible, but certainly such a vaccine should have a very much higher degree of protective action than the ordinary vaccine. It has seemed to us that this is so. At least, it seems to warrant the further more careful study of the value of vaccines both prophylactically and therapeutically.

We have used our vaccine prophylactically in a series of about sixty children who had not had whooping cough and whose brothers or sisters were receiving treatment for whooping cough at our clinic. In general, the results might be said to be inversely proportional to the stage of the incubation period. If given early enough, complete protection results. If given late in the incubation period or after the prodromal catarrhal stage has begun, then the disease is aborted and runs a shorter and milder course. Even in the treatment of the disease itself some benefit seems to result, but comparatively little should be expected in the way of results after the third week, as the serologic changes with the formation of agglutinating bodies and complement fixing bodies have occurred, and vaccine therapy at the most is going to increase the amounts of these substances. In this respect it probably is of value, as immunity in pertussis seems to be a quantitative rather than a qualitative process. The prophylactic dosage, as we have employed it, has been based on the local reaction. The initial dose has been 0.5 c.c., or 3,000,000 killed bacteria. The second dose has varied from 0.5 to 1 c.c., depending on the degree of the skin reaction, and the third dose has usually been double the second one. The inoculation has been given on alternate days. Therapeutically the same method has been followed, but usually five injections have been given.

MORTALITY

The mortality in the entire group of 850 cases has been extremely low. In the first series of 300 cases, only one death occurred. In the supplementary group there have been only two deaths directly attributable to whooping cough. One of these, as noted above, was the result of a very severe case complicated by bronchopneumonia and convulsions. In the other also there was a diffuse bronchopneumonia when first seen. In addition to these cases there was one case in a child, aged 7 years, who developed whooping cough following a severe case of measles with pneumonia and which was further complicated by the presence of a chronic endocarditis. Two other children in the series have died, but of some other intercurrent infection at least three months after the whooping cough. These we do not feel have any relationship to the disease, especially as the roentgenogram in both instances showed a return to normal. This is, as far as we know, the lowest mortality

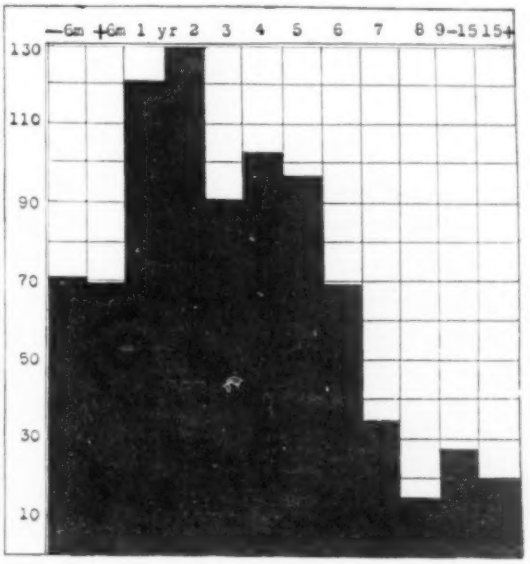

Fig. 1.—Number of cases at different ages.

figure in any comparably sized series of cases, and for that reason is of great importance in emphasizing the value of the treatment, as a number of the patients were almost moribund when first seen.

Henry,[15] in a recent statistical study of measles and whooping cough in Massachusetts, states that 33 per cent. of the cases and 90 per cent. of the deaths from whooping cough occur in children under 3 years of age. In 37,638 cases there were 2,389 deaths, which gives a percentage of 6.4, against the 0.3 per cent. of our series. This was five times the mortality rate from measles during the same interval.

Reiche[16] similarly reports the mortality statistics of Hamburg over a fifty-year period with a mortality rate of 12.2 per cent, or forty times our figure.

COMMENT

The roentgen-ray treatment of whooping cough seems to have passed beyond the experimental stage. The literature of the past year has had a considerable number

15. Henry, J. E.: Statistical Study of Measles and Whooping Cough in Massachusetts, Am. J. Pub. Health **11**: 302 (April) 1921.
16. Reiche, F.: Mortality of Whooping Cough, Med. Klin. **17**: 33 (Jan. 9) 1921.

of reports from Canada, various parts of the United States and Europe, all of which tend to corroborate the feeling which we have concerning its efficacy. Various suggestions as to the mechanism by which the clinical improvement takes place have been advanced, but the general feeling seems to be that it is due to a diminution in the nervous reflex from the pressure of the hilum lymph nodes by a reduction in their size. In addition, there may be some effect on the blood serum, as has been suggested in relation to the etiology of the convulsions in the more severe cases.

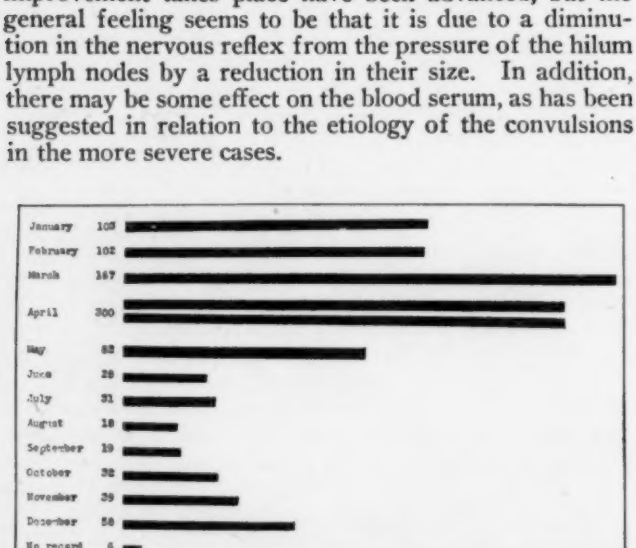

Fig. 2.—Seasonal incidence of 985 cases, including all cases up to May 1, 1925.

The only criticism with which we are familiar in respect to this method of treatment is the possible harmful effect of the roentgen ray on the thymus and thyroid. It is possible that some action on the thymus takes place. It is not mensurable radiologically even after three months. In a series of cases as large as this we have had the good fortune to have a considerable number of definite cases of thymic hypertrophy. A number of these we have treated for this condition with larger doses of roentgen ray, and have secured similar favorable results, as well as actual thymic atrophy. The doses are so small ordinarily that it does not seem possible that any damage of physiologic significance can be caused, especially as the entire dosage is considerably less than a skin erythema dose, and in the series of nearly a thousand cases we have not had a single unfavorable report in this respect.

This study emphasizes the importance of early diagnosis and brings out the fact that such diagnosis should be possible in a large majority of the cases through a combination of bacteriologic, hematologic and roentgenologic examinations in conjunction with an adequate history. It further suggests that the present quarantine regulations, which vary widely in different towns within the same state as well as in different states, are purely empiric and have no scientific justification. It should be possible to unify the quarantine code in this respect, shortening the time of quarantine to not more than four weeks and in that way be able actually to enforce isolation, which at present is impossible. With adequate quarantine and early diagnosis, coupled with prophylactic vaccination of all exposed persons, the morbidity should be reduced very materially and with it the concomitant mortality. It should be possible ultimately to provide for the vaccination against whooping cough of all infants from the third to the sixth month of life. Our present knowledge suggests that such an immunity would last for about a year. This prophylactic vaccination could then be repeated yearly for the first three or four years, which represents the years in which practically the entire mortality of whooping cough occurs. These preliminary studies of nearly a thousand cases justify the further investigation of means of treating this serious infection of childhood. It is our hope to extend this work to the various local boards of health, hospitals and laboratories, with the ultimate expectation of securing a specific means of therapy for pertussis. By such a concerted attack, a thorough survey should be possible and much evidence accumulated which it is impossible to do from one small group. The roentgen-ray treatment of the disease, which has gained the confidence and support of both the laity and the medical profession to a large degree, offers a means to this end, as it is possible to secure cases for study in this way which it has not been possible to do previously.

For this reason we appeal to the medical profession for furtherance of this work. Whooping cough still occupies one of the chief positions in infant mortality figures. We feel that, by the roentgen-ray treatment of whooping cough, combined with vaccine, as well as the ordinary medicinal agents, we have gone a step forward. Our own part in this program is comparatively unimportant. Our chief function is to stir up curiosity and interest in whooping cough and to maintain that interest by constant effort. If we can do this, whooping cough will follow in the footsteps of most of other recognized infectious diseases, as diphtheria, and now scarlet fever, have done.

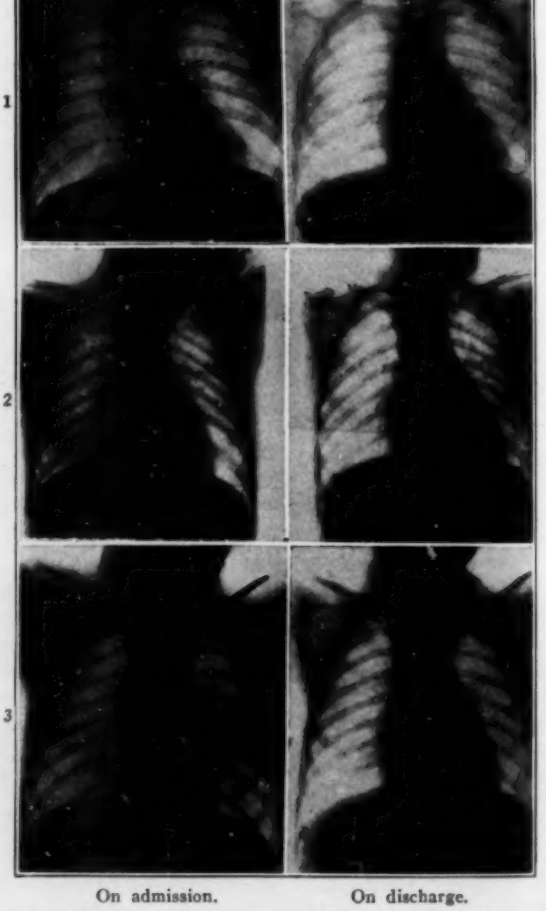

Fig. 3.—Typical roentgenologic findings in three classes of pertussis on admission and on discharge.

SUMMARY AND CONCLUSIONS

An analysis of 850 cases of pertussis treated by roentgen ray proves that:

1. This means of therapy is of value in reducing the number and severity of the paroxysms and in shortening the course of the disease.
2. The majority of the cases (750) occur under 7 years of age.
3. Most of the patients (499) present themselves in the paroxysmal stage.
4. The greatest benefit occurs in the paroxysmal stage, and especially in the younger patients.
5. Early diagnosis can be established bacteriologically and by blood examination, as the disease is accompanied by an absolute and relative lymphocytosis in 80 per cent. of cases during the catarrhal stage.
6. Suitable vaccines made from organisms with an agglutination titer of 1 : 1,600 plus are effective prophylactically, and if given in sufficiently large and frequent doses are of value therapeutically, suggesting that immunization is quantitative.

These observations suggest that, by early diagnosis, adequate quarantine for the actual infective period can be required, with a concomitant decrease in the morbidity and mortality.

ABSTRACT OF DISCUSSION

DR. I. A. ABT, Chicago: It is well worth while to consider any treatment that promises to help in the cure of whooping cough, because we recognize that this disease of infancy and childhood is attended by a high mortality. The statistics on this subject presented several years ago by Dr. J. L. Morse of Boston showed a high mortality from this disease. So far as age incidence is concerned, Dr. Smith showed that whooping cough may occur at any period and that it is frequently observed in new-born babies, during the first days of life, and that mortality from the disease is highest during young life. In regard to the etiology of the convulsions, he pointed out that they might depend on the presence of tetany or spasmophilia. It would be interesting to note in these patients with convulsions whether blood calcium was diminished as it commonly is in spasmophilia. It has been known for a long time, and it was pointed out early by Sigmund Freud, that encephalitis was an occasional complication of whooping cough, and that convulsions and paralyses were manifestations of this condition. Later on, Oppenheim reported cases of spinal cord hemorrhage with severe nervous manifestations. Cerebral hemorrhages may occur at times with accompanying convulsions. The author referred to a patient with an extremely high leukocyte count with marked lymphocytosis. We recently had a similar experience. A child was admitted to the hospital with a leukocytosis of 150,000 and about 75 per cent. of lymphocytes. The child was coughing slightly, though our first impression was that it was suffering from a lymphatic leukemia. Paroxysmal cough increased; the leukocyte count gradually fell; the lymphocytes diminished in number, and a clinical diagnosis of whooping cough was confirmed by the symptoms. The author has emphasized the value of roentgen-ray treatment. The various therapeutic agents recommended in the treatment of whooping cough have been so varied and so numerous that the average physician is skeptical when a new remedy is suggested. It has been recently reported that more than 400 remedies have been proposed for the treatment of whooping cough. Each one has been sanguinely recommended, though nearly all of them have fallen into disuse. I am not convinced as to the specific curative effect of the roentgen ray. It seems to help in some cases. In a number of cases it has utterly failed in our hands. It is reported that some patients show a sharp reaction after the use of the roentgen ray and after this improvement seems to take place. It is conceivable that the use of the roentgen ray may diminish newly formed lymphoid tissue and swollen lymph nodes about the trachea and bronchi, and in this way remove the effect of mechanical pressure on these structures. Possibly the paroxysms of coughing are diminished by the disappearance of newly formed lymphoid tissue. It has been suggested that neuropathic children are more severely affected by whooping cough than normal children. Many clinicians have found that suggestion and imitation increase the tendency to cough. The results from the use of vaccines in the treatment of whooping cough are not uniform. Occasionally a patient shows improvement, and perhaps as frequently no decided result is obtained. Certainly, it is not a specific remedy in the sense that it cures a majority of those affected. I agree with the author, however, that combined treatment with roentgen ray and vaccine should be employed early in the disease, because a certain number of patients are benefited.

DR. JULIUS HESS, Chicago: The series of cases that I have had is very much smaller than those presented by Dr. Smith. The first group, summer and fall cases, numbered sixty-two, and the second, or winter, group, forty cases. I divided these two groups in this way because the results differed very decidedly. We classed as +++ striking results, with marked relief within a day or two of the last treatment; ++, considerable relief with amelioration of the more distressing symptoms during the course of or shortly after the treatments; +, questionable results, and 0, no results. In the summer and fall series of sixty-two cases, 43 per cent. resulted in striking improvement of the symptoms and could be classed as +++; 32 per cent. definite but less marked improvement, and 25 per cent. resulted in little or no change in condition of the children. In the winter group of forty cases, 25 per cent. showed striking improvement; 27.5 per cent., definite but less marked improvement, and 47.5 per cent., little or no change. The winter results, as a whole, were less striking than those of the summer and fall. Of the seventeen patients receiving vaccines, from three to five doses without improvement before the roentgen-ray treatment was started, there were six +++, four ++, one + and six showing no result after roentgen-ray treatment. In six cases in which vaccine was given, after failure of roentgen-ray treatment, there was no evident improvement which could be construed as related to the therapy. In pertussis complicated by pneumonia, six cases of nontuberculous pneumonia which came under treatment, marked general improvement with lessening of paroxysmal coughing followed the institution of roentgen-ray therapy. The number of exposures varied from one to three, and they were given at two and three day intervals when repeated. I think we are still in the early stages of this treatment, and that the general recommendation for this method of treatment to the general practitioner should be made with a good deal of thought. I think there is danger of atrophy of the thyroid or the thymus by irradiation, especially at short intervals; the thyroid should be well protected; I have never given treatments at less than five day intervals. We used a dosage of 4 milliamperes, with 2 mg. aluminum filter, 7 inch spark gap and 14 inch distance, with five minute exposures.

DR. L. W. SMITH, Boston: In regard to the origin of the convulsions, about which Dr. Abt comments, we have had no cases since we have had the question of latent tetany in mind, and have not had the opportunity, accordingly, to make any blood calcium determinations. We feel that this may be a factor in the production of convulsions. None of our cases have had evidence of any paralysis, which, when they occur, are usually due to cerebral hemorrhage. I think there is no doubt that the roentgen ray does, as Dr. Abt suggests, reduce the size of the tracheal lymph nodes. This has been seen in the lantern slides and has been commented on by the roentgenologists. In regard to the dosage, we have constantly used a tube distance of 28 inches rather than 14 inches, as Dr. Hess has, which cuts the total dosage approximately in half. The total of the four doses has been computed at rather less than half the erythema dose. We have protected the thyroid also in many of our cases, particularly at the outset, when we were experimenting with the dosage and were not sure of the effects of the treatment. The roentgen-ray treatment has definitely worked out well, not as a cure, but in relieving the spasms and reducing their number, and in that way reducing the mortality from the disease. There is apparently no uniformity of regulation with regard to quarantine in the various states. In some there is also local option with the health boards, some requiring two weeks, others as much as twelve. If we can accept scientific evidence as far as bacteriologic studies go, the infectious period is not as long as most local boards assert.

PHARYNGO-ESOPHAGEAL DIVERTICULA

DIAGNOSIS AND PREOPERATIVE MANAGEMENT *

PORTER P. VINSON, M.D.
ROCHESTER, MINN.

In 1840, Rokitansky described two types of diverticula of the esophagus, traction and pulsion, and Oekenomides, in 1882, added the traction-pulsion variety.

The traction diverticula are usually situated in the region of the left main bronchus, and caused by extension of inflammation from a mediastinal lymphadenitis. When healing occurs, contraction of scar tissue pulls out a portion of the wall of the esophagus and produces a small sacculation. This type of diverticulum is, as a rule, symptomless, but may give rise to mediastinal abscess with esophagobronchial fistula, or, if obstruction occurs in the esophagus distal to it, a pulsion force is added which may cause the formation of the traction-pulsion type of sacculation.[1] This inflammatory traction type is rather frequently seen at necropsy but is rarely recognized during life.

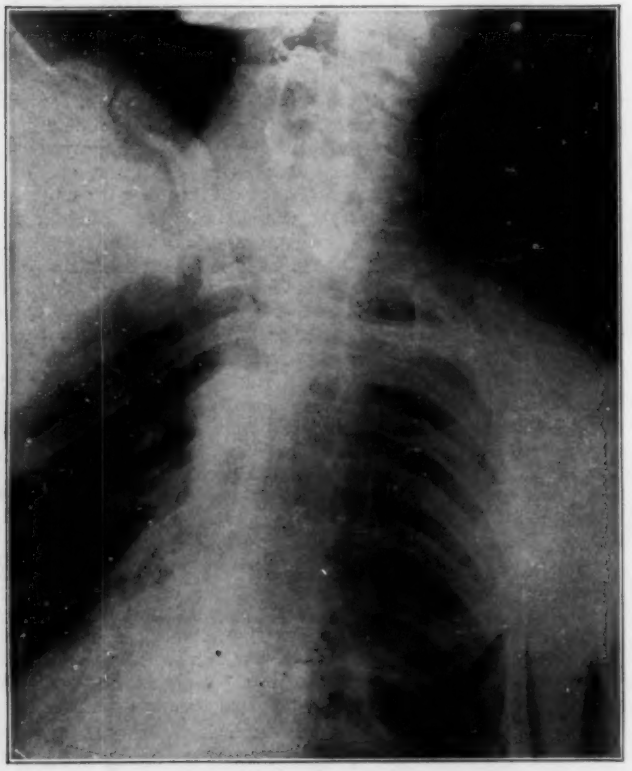

Fig. 1.—Pharyngo-esophageal diverticulum, showing pharynx outlined with barium.

When the pulsion type of diverticulum occurs in the lower portion of the esophagus just above the cardia, it may cause considerable discomfort; but, fortunately, this situation is very rare. The common site is in the lower pharynx just above the esophageal opening. Although termed pharyngo-esophageal, it is in reality a pharyngeal diverticulum (Fig. 1). It has been described by numerous authors and, although a relatively rare lesion, it has become so well known that many patients suffering from one of the more common types of esophageal obstruction are erroneously thought to have a diverticulum.

Since 1907, 112 diverticula of the esophagus have been observed at the Mayo Clinic. Two of these were considered the traction-pulsion type and were located at the bifurcation of the trachea; four of the pulsion type were located just above the cardia, and 106 were of the pharyngo-esophageal type.

Thirty-five diverticula of the pharyngo-esophageal type have been seen during the last two years, and they form the basis for this critical analysis. Thirty-one of the patients were males and four were females. The youngest was a woman, aged 42, and the oldest was also a woman, aged 83; the average age was 59 years.

SYMPTOMS

The symptoms depended largely on the size of the sac, being most severe in patients having large pouches. At the onset there was usually a sense of irritation in the throat, and an apparent increase of mucus. Then small particles of food lodged in the diverticulum, causing a feeling of obstruction high in the esophagus. With enlargement of the sac there was a very characteristic noise on swallowing liquids. An irritative cough was frequently noted, and the regurgitation of food and mucus at night seriously interfered with sleep. Regurgitation was so frequent immediately after meals that many patients made it a habit to wash out the sac after eating and before going to bed. The food regurgitated was usually that which had been taken at the beginning of the meal.

As the sac became larger, the opening into it came to lie in the same plane with the opening into the esophagus, and the weight of the retained food and secretions pulled on the esophageal aperture until it became a tiny slit, causing increasing dysphagia, so that in a few cases there was complete obstruction to the passage of any type of food. This, of course, caused such marked loss of weight as to increase the hazards of treatment. Twenty patients had lost from 5 to 63 pounds (2.3 to 28.6 kg.) and had suffered a corresponding loss in strength.

A definite swelling in the neck when the sac was filled with food was not a constant finding and could not be considered of much value in diagnosis. However, if the patient was given a drink of water and sudden deep pressure made on the left side of the neck, the water was forced back into the mouth and produced the same type of gurgling noise as was experienced on swallowing liquids.

Pains in the neck were a rare symptom.

The onset was insidious in all cases. Three of the patients had had an ordinary sore throat preceding the onset; one had had tonsillectomy a month previously; and one developed symptoms following a political speech. There was nothing in the histories of the other patients to suggest any etiologic factor. The duration of symptoms varied from four months in one case to sixteen years in two others, the average being five and one-half years. Occupation apparently had no influence on the production of the lesion.

DIAGNOSIS

The diagnosis can usually be made from the history and ordinary physical examination. Roentgenographic examination is of the greatest value in determining the size of the diverticulum. The passage of a blunt olive

* From the Section on Medicine, Mayo Clinic.
* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Vinson, P. P.: Cardiospasm Associated with Esophageal Diverticula, New York M. J. **117**: 540 (May 2) 1923.

over a silk thread, as previously described by Plummer,[2] is absolute confirmatory evidence of sacculation (Fig. 2 *a*).

In differential diagnosis, all diseases producing obstruction high in the esophagus must be considered; but if examination is methodically carried out, errors should be rare. In one patient an epithelioma had developed in the sac and called for careful esophagoscopic examination, but in most cases, the esophagoscope was of very little value in diagnosis or treatment.

TREATMENT

Usually the sac should be removed surgically by the method described by C. H. Mayo,[3] Judd,[4] Bevan [5] and others. Operation was advised in all the cases except those in which the sac was so small that it was not giving sufficient trouble to warrant operation, or unless the infirmities of age contraindicated it.

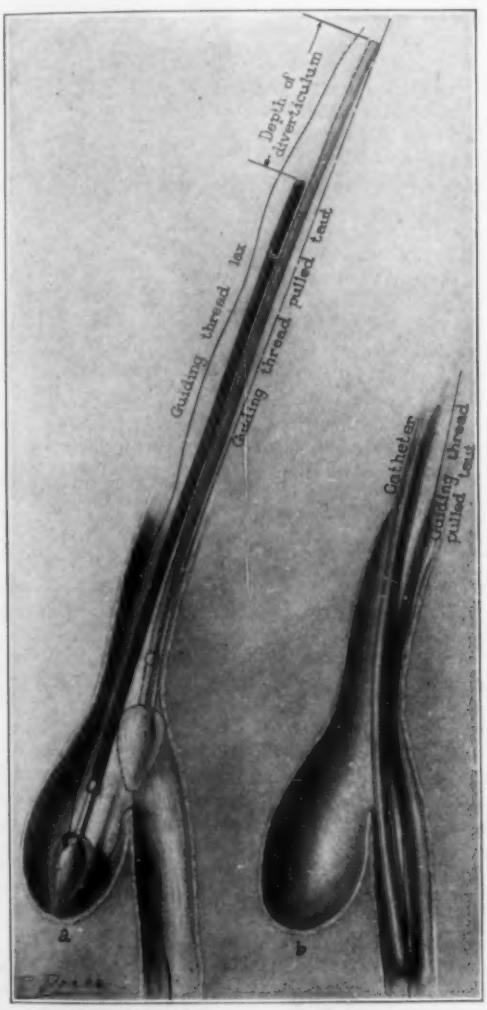

Fig. 2.—*a*, method of introducing sound into diverticulum sac and by drawing thread taut, determining the depth of the diverticulum; *b*, catheter introduced into the esophagus over a silk thread.

In many cases in which operation was required, it was performed without any especial preparation; but when esophageal obstruction was nearly complete and the patient was weakened from lack of food, it was found that the passage of a catheter into the esophagus over a silk thread permitted the introduction of food into the stomach and markedly increased the vitality (Figs. 2 *b*, 3, 4 and 5). One of the patients gained 21 pounds (9.5 kg.) in five weeks, and another 29 pounds (13 kg.) in three months. This method of feeding is occasionally a life-saving measure, as the risk of a gastrostomy is almost as great as that attending immediate removal of the sac. In using this scheme of feeding, it is well to introduce through the catheter some of the salivary secretion contained in the sac, as this unquestionably aids digestion and hastens improvement of the patient. The catheter can either be left in the esophagus, or be introduced at each feeding. It is, of course, advisable for the patient to remain in the hospital; but if this is not possible, it is very easy to train a member of the family to pass the tube over the thread. Patients with very large sacs occasionally find it difficult to swallow a thread unless the pouch is first emptied. If the thread is taken with the sac empty and no fluids are taken for from four to six hours, the thread will pass into the stomach and intestine without difficulty and can be used as a guide in instrumentation.

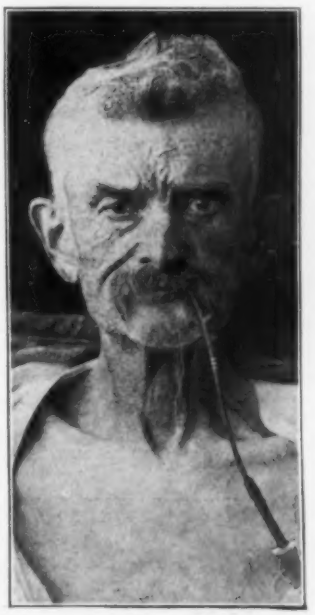

Fig. 3.—Patient with catheter introduced into the esophagus.

ABSTRACT OF DISCUSSION

DR. FRANK H. LAHEY, Boston: I have been very much interested in pharyngo-esophageal diverticula, particularly from the surgical point of view. All the cases that we have had have been referred to us by laryngologists. The operation in the past has had a bad name, owing to the fact that the one stage operation resulted in so many fatalities. The esophagus does not lend itself well to suturing, and by the one stage method of removal of the sac and suturing, leakage occurs and passes down along the tract into the mediastinum from which the diverticulum was removed, producing a mediastinitis that is practically always fatal. There are three stages of esophageal diverticula: the stage of irritation when the patient hawks and complains of a rough feeling in the throat, and raising a small amount of mucus; the stage in which there is more or less difficulty in swallowing, and the final stage—practically complete obstruction. The laryngologist has been able to help a great deal in this last stage by esophagoscopy, because when the diverticulum becomes large it drags down on the esophagus until the opening of the diverticulum is in the transverse position, while the opening of the esophagus is in the lateral position. By esophagoscopy a side opening has been demonstrated, and by dilating that the patient's condition has been improved a great deal in preparation for operation. The operation can be made practically safe by the two stage procedure, and patients are immediately relieved of the difficulty of swallowing because the axis of the diverticulum is pulled to the transverse position and the true opening of the esophagus is converted into a transverse one, so that the food goes directly into it. There is one situation about which

2. Plummer, H. S.: Diverticula of the Esophagus, with a Report of Six Cases, Northwest. Lancet **29**: 270-274, 1909.
3. Mayo, C. H.: Diagnosis and Surgical Treatment of Esophageal Diverticula: Report of Eight Cases, Ann. Surg. **51**: 812-817, 1910.
4. Judd, E. S.: Esophageal Diverticula, Surg., Gynec. & Obst. **27**: 135-141 (Aug.) 1918.
5. Bevan, A. D.: Pulsion Diverticulum of the Esophagus: Cure by the Sippy-Bevan Operation, Surg. Clin. Chicago **1**: 449-457 (June) 1917.

we have been very careful, and that is the tendency in removing the diverticula to take out too much of the esophagus. When we take out the diverticulum and begin to dissect the sac, if it has a very narrow neck it is easy to discriminate between the esophagus and the sac itself. On the other hand, if it has a broad opening into the esophagus, as is very common, it is easy to become overenthusiastic and dissect away too large a part of the esophagus, and then one narrows the esophagus by implanting a part of the esophagus rather than the neck of the sac into the skin on the neck in the two stage procedure. Probably the best explanation of the cause of pharyngo-esophageal diverticulum is that of neuromuscular incoordination of the cricopharyngeus fibers. The diverticulum occurs at the pharyngeal junction at a weak point in the middle line of the back wall of the esophagus at the level of the cricoid cartilage, and a majority of the cases go to the left side. In all probability, the same factors that produce diverticula in the beginning are present after the sac has been removed, and in following the cases postoperatively we have found that if dilation is not continued postoperatively, a further dilatation may occur and we have some cases now that are beginning, owing to failure to dilate postoperatively, to produce a slight secondary dilatation. Therefore, from our experience we would urge that not only should the diverticulum be removed by the two stage method, but the patient should return to the laryngologist for follow-up dilation in order that a recurrence, due to the persistence of the original condition which logically produces diverticula, may be overcome.

Fig. 4.—Diverticulum in same patient as Figure 3.

DR. CHEVALIER JACKSON, Philadelphia: Dr. Lahey's remarks are important. The chief factor in the etiology of diverticulum is the pinchcock action of the cricopharyngeal muscle. The pinchcock is always closed, except when it momentarily opens at the approach of the food or water in normal swallowing. When it fails to open, tremendous pressure is put on the walls, which causes a pouching at the weak point. It is not a weak point simply, but the extraordinary squeezing pressure put on the bolus by the oblique fibers of the inferior constrictor when advance of the bolus is resisted by the failure of the cricopharyngeal pinchcock to open. That puts extraordinary pressure on the weak point. An anatomic factor with an embryologic basis has been demonstrated by Mosher. Traction diverticulum is supposed not to cause symptoms because the lower orifice is lower than the upper, and consequently the sac empties itself readily. But the chief factor is that there is no cricopharyngeal pinchcock to produce obstruction ahead. I cannot agree with Dr. Vinson that the esophagus is not of use in the removal of a diverticulum. Da Costa, Gaub, Gibbon, Stewart, Shallow and other surgeons regard the esophagoscope as an invaluable aid at operation in locating and dissecting out the sac and in preventing the amputation of too much, as mentioned by Dr. Lahey. Dr. LeWald and other roentgenologists of experience can make a correct diagnosis in 95 per cent. of cases, but exclusion of malignancy and treatment of a strictured subdiverticular orifice require the esophagoscope. I cannot agree with Dr. Vinson as to the necessity of a string in the diagnosis of pharyngo-esophageal diverticulum. I think that instead of drawing an inference from the behavior of the string, it is better to make a diagnosis as one would in disease of the cervix, as one would in adenoids or in any other inaccessible region where one can put in a speculum and look at it. The esophagoscope is an esophageal speculum. To treat the esophagus without it is parallel to treating pelvic disease without a vaginal examination.

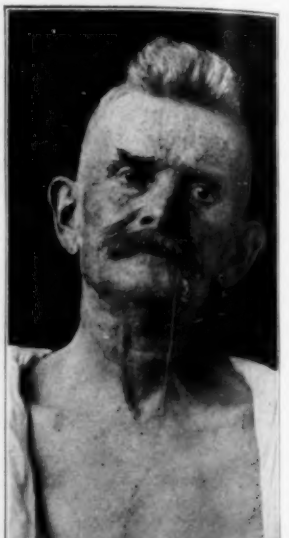

Fig. 5.—Same patient three months later. Patient had gained 29 pounds (13 kg.).

DR. SAMUEL IGLAUER, Cincinnati: By the string swallowing method it is much easier to find the pouch orifice than by simply introducing an esophagoscope. The tendency of the esophagoscope is to go into the pouch, and it is very difficult, at least in my experience, to introduce it past the pouch into the esophagus. If, however, the patient has swallowed a string, the esophagoscope is passed over the guiding string and then one has no difficulty in getting past the pouch into the lower esophagus. Another point is the one which has been suggested, that after operation dilation should be done to prevent recurrence. After operation there are so many adhesions that the esophagus has not its normal motility, and it is difficult to pass the esophagoscope. I think there is considerable danger of laceration or rupture of the esophagus after the patients have been operated on if one attempts to introduce that instrument. At least, it should be done with extreme care. In some cases it is impossible to get it past this adherent area in the esophagus.

DR. PORTER P. VINSON, Rochester, Minn.: Dilating these sacs, or rather dilating the esophageal opening before the removal of the diverticulum, as mentioned by Dr. Lahey, has not been very effective in my cases. As a matter of fact, there is no stricture of the esophagus; the weight of the large sac may make as much obstruction from pressure on the esophagus below the sac as at the opening itself. The passage of sounds in my experience has not given the patient relief. The sacs, of course, usually lie to the left side because the normal inclination of the cervical esophagus is toward the left. In the Mayo Clinic cases in which there was recurrence, there has been slight infection around the sac following operation. Dr. Jackson and I have never agreed on this thread proposition. I am grateful to him for his remarks, but we have found that in a diverticulum, or in any esophageal condition, the thread is of the greatest value as a guide in instrumentation.

RÔLE OF SURGERY IN THE TREATMENT OF PULMONARY SUPPURATION *

EVARTS A. GRAHAM, M.D.

ST. LOUIS

The same general principles of the treatment of pyogenic infections elsewhere apply equally well to those conditions of the lung. These are essentially (1) drainage, (2) obliteration of infected cavities and (3) extirpation of chronically inflamed tissue. The differences between suppurations of the lung and suppurations elsewhere consist chiefly in differences in the structure of the lung as compared with that of other organs. In this connection the lung should be regarded as a multilocular structure opening into a tube that leads to the outside of the body. Natural drainage, therefore, is usually through this tube and is often effective, leading to a spontaneous recovery. In many other cases, however, because of the multilocular nature of the lung parenchyma, many small abscesses occur which do not connect adequately with the natural drainage tube, and the result is therefore one of unsatisfactory drainage. The walls of the bronchi and bronchioles often become necrotic and dilated; and when the condition has become chronic the bronchi become thickened with fibrous tissue and their lumina become lined with granulation tissue, which bleeds easily. The condition of so-called bronchiectasis is then present, and single or multiple bronchiectatic cavities may be formed, which may give rise to chronic cough with intermittently foul and copious sputum, pulmonary hemorrhages, etc., symptoms that are too often regarded as being necessarily indicative of pulmonary tuberculosis.

There are various aids to the establishment of satisfactory drainage. The simplest of these is posture. If an abscess has already established communication with one of the larger bronchi, it is often amazing to witness the spectacular recovery that follows the improved drainage secured by placing the patient two or three times a day in the most advantageous position for the outflow of pus. The bronchoscope serves likewise, in the hands of the skilled bronchoscopist, to promote drainage. It is of paramount value, however, in removing the essential cause of the abscess in those cases which follow the inspiration of a foreign body; for usually, at least in the relatively acute cases, the removal of the foreign body is followed by the prompt recovery from the abscess. Surgical drainage by an incision into the abscess accomplishes the most abundant drainage, but it is unnecessary in many cases, perhaps in the majority, when the fact is considered that probably only the larger abscesses are diagnosed.

One of the reasons for the rapid healing of acute abscesses in most of the soft tissues of the body is the fact that the walls of the abscess fall into apposition with each other after drainage has been established. For several reasons, however, the cavities formed by abscesses in the lungs do not become collapsed so readily. Because of this fact, the various methods of compression therapy, such as artificial pneumothorax and thoracoplasty, are logical procedures when their proper indications are present, because they induce the desired apposition of the walls of the suppurating cavities.

Finally, as a means of combating a chronic suppurative process of many years' standing, it was but natural to consider the desirability of the extirpation of the diseased tissue, a procedure found to be effective in chronic inflammations of the appendix, the gallbladder, etc. But, unfortunately, the ordinary method of resecting considerable portions of lung tissue has carried with it a prohibitive operative mortality. For example, the ordinary lobectomy in the published reports of forty-eight cases has been associated with an operative mortality of 52 per cent.[1] In order to perform the operation of lobectomy, it is necessary first to free the lung from the structures to which it has usually become adherent. This mobilization of the lung results in the creation of large raw surfaces no longer protected by their pleural coverings, and infection of these surfaces is a frequent sequel. It is not surprising, therefore, that the majority of the fatalities are due to mediastinitis and pericarditis.

Fig. 1.—Schematic drawing to illustrate the massive drainage of the lung secured by cautery pneumectomy.

One of the most difficult problems at present concerned with the treatment of all lung suppurations is the determination of the indications for any particular therapeutic procedure in a given case. It is even difficult in many cases to decide whether the treatment should be operative or not. For these reasons it is most desirable that these cases should be seen and discussed by a team experienced in the handling of such problems. The team should consist preferably of a surgeon, a medical chest man and a bronchoscopist. Each should have had special training in this kind of work, for this work has now become specialized. I do not mean that there are or should be specialists in lung suppuration in the same sense as the specialist in diseases of the eye or of the skin. But what I wish to imply is that the ordinary surgeon and the ordinary internist are not qualified to deal satisfactorily with these cases unless they have had special experience in this work. The surgery of the lung means vastly more than the purely technical features. The diagnosis is often extraordinarily difficult and the surgeon himself should be an adept in all the methods of making a diagnosis, including fluoroscopy and the interpretation of the roentgen-ray films. As in all other fields of medicine, there are a large number of helpful little tricks in arriving at a diagnosis which can be learned only by extensive experience in this sort of work. The need for specialized

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* Chairman's Address, read before the Section on Surgery, General and Abdominal, at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Graham, E. A.: The Surgical Treatment of Bronchiectasis, Arch. Surg. 6: 321 (Jan.) 1923.

study and training in this field has been reflected in the creation of the American Association for Thoracic Surgery, an organization which now, after six years, has nearly a hundred members composed of surgeons, internists, bronchoscopists and roentgenologists, all of whom, by combining their experience and by making a special study of the various problems involved, are attempting to bring order out of some of the chaos that exists.

As a result of combined experience, I believe that certain generalizations of treatment can be stated. For example, in the case of an acute abscess of the lung,

Fig. 2.—Aspiration of bronchial fistulas by suction machine after cautery pneumectomy.

the location of the abscess is a point of prime importance. If it is situated near the hilum and particularly if it has already established a partial communication with a bronchus, treatment by means of suitable posture or by the bronchoscope or by compression accomplished by artificial pneumothorax should be tried before resorting to surgical drainage by incision. In utilizing these measures, it is necessary to exercise the same care as in any other therapeutic procedure. Postural drainage, for example, is most effective when carried out on a specially constructed table which will permit the patient to be inclined at any desired angle. Bronchoscopic treatments should be conducted only by a skilled bronchoscopist because, at the hands of the unskilled, they may be very dangerous. The use of pneumothorax likewise should be undertaken with the utmost caution in order to avoid disasters. Singer and I, in our own work, seldom introduce more than 200 or 300 c.c. of air at the first sitting. If only enough air is introduced to cause a separation of the two pleural surfaces, the elastic tissue of the lung contracts sufficiently to produce an appreciable compression of the lung, if no adhesions are present. In this way it will be possible to avoid the disasters that sometimes occur from crowding of the mediastinal structures over against the opposite lung.

If, however, these measures are not followed by prompt improvement, if pneumothorax treatment is impossible because of the presence of adhesions, or if the abscess is peripheral, surgical drainage is indicated, preferably by a two-stage method unless adhesions are definitely known to exist. By such a general plan of procedure, not only will many drainage operations be found unnecessary, but the total mortality will be much reduced. In an extensive review of the literature of lung abscess, Lockwood [2] showed that the average surgical mortality was 34.6 per cent. By carrying out the general plan just mentioned, however, our own mortality in the acute cases has been 22 per cent. In those cases in which an acute pulmonary abscess is associated with an empyema, our own experience indicates that it is better to drain the empyema first before attacking the lung itself. In the majority of instances of this kind, the abscess of the lung will heal spontaneously if only the empyema is drained, presumably because it has already established satisfactory drainage into the pleural cavity.

As is well known, a more difficult type of case to treat properly is that in which the condition has become chronic, extending often over a period of twenty years or more. In general, two types of chronic cases are seen, those in which the features of abscess predominate and those in which the chief characteristics are of bronchiectasis. A sharp differentiation, however, between these two types cannot be made satisfactorily because in every case of chronic abscess some bronchiectasis is probably present, and in every case of bronchiectasis there are usually multiple small abscesses. The natural course of these chronic cases, after a period of prolonged invalidism, is to end by death from a pulmonary hemorrhage, a cerebral embolism which usually results in an abscess of the brain, an extension of the suppurative pneumonia, or from the effects of amyloid degeneration of the viscera. The same general principles of treatment apply here as have been mentioned already in regard to the acute lung abscess; but each principle, when applied alone, has failed to relieve the symptoms in the majority of cases. Simple surgical drainage in such cases will usually drain only a small part of the diseased lung. Postural drainage, however, if systematically and persistently carried out, will occasionally result in amazing improvement, even if the condition has been present for years. Likewise, bronchoscopic

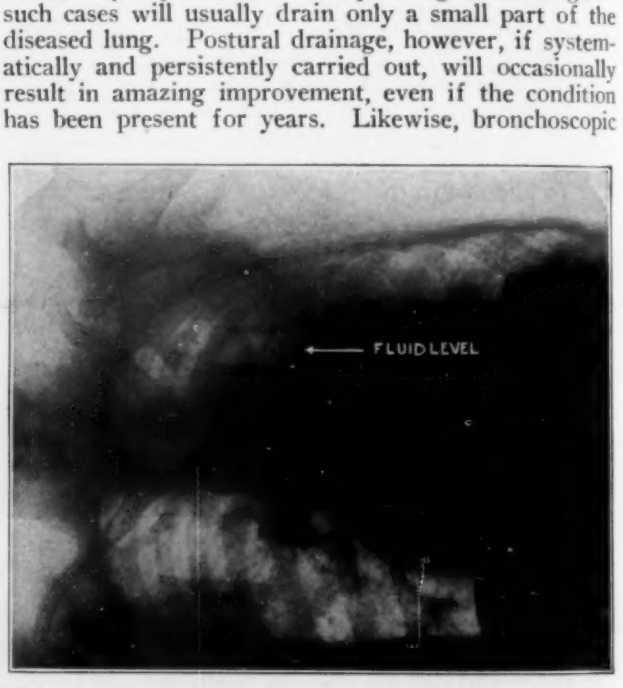

Fig. 3.—Chronic abscess of lung found to be associated with pulmonary tuberculosis in a man, aged 62, successfully treated by cautery pneumectomy. Horizontal view to show fluid level.

drainage, when repeatedly performed, will often result in marked improvement. Moore [3] has given the results in the treatment of thirteen cases of lung suppuration at Jackson's bronchoscopic clinic; of this number, 25 per cent. are reported as cured, 42 per cent. as improved, and 33 per cent. as unimproved.

Compression therapy also will be effective in some of the chronic cases. Singer and I have occasionally

2. Lockwood, A. L.: Abscess of the Lung, Surg., Gynec. & Obst. **35**: 461 (Oct.) 1922.

3. Moore, W. F.: Bronchosopic Treatment of Suppurative Diseases of the Lungs, J. A. M. A. **82**: 1036 (March 29) 1924.

secured complete relief from symptoms after repeated pneumothorax treatments. Hedblom [4] has obtained excellent results in a series of ten cases of the bronchiectatic type of suppuration by graded extrapleural thoracoplasty; but in those of the type resembling chronic abscess, the results were not nearly so good.

It is in these cases of chronic suppuration that resection of the diseased portion of the lung would seem to be the most useful procedure if it were not associated with so prohibitive a mortality even at the hands of an expert like Lilienthal. It occurred to us, however, that all the principles known to be effective in the treatment of the chronic suppurations could be combined in one procedure which, for want of a better name, we have called cautery pneumectomy. A detailed description of this operation has already been published.[5] Only certain features of it will be mentioned here. The operation consists, first, of an extensive exposure of the portion of the lung affected, which is usually obtained by the removal of three or four ribs for a distance of about 4 inches each. Then, without separating adhesions but, on the contrary, establishing them if none already exist, a large area is cauterized with an actual cautery. At first no attempt is made to burn away a large mass of lung. The idea is rather to establish numerous bronchial fistulas through which massive drainage may be accomplished. Compression over the diseased portion is obtained by tight bandaging and packing of the wound. At later stages, more and more lung can be burned away if necessary by increasing the depth of the cavity; but after providing for a few weeks such massive drainage as can be accomplished by the many bronchial fistulas, it frequently happens that much less lung tissue needs to be destroyed than was at first thought. In some cases, however, as many as six or eight cauterizations have been done. In my own experience in thirty-one cases of chronic pulmonary suppuration that have been treated in this manner, the problem of hemorrhage has not been a serious one. This is due chiefly to the fact that the blood pressure in the pulmonary artery is usually only about 20 or 25 mm. of mercury. Packing with gauze has always satisfactorily controlled any bleeding that has occurred. In this series only one death has occurred from hemorrhage. That was in a child whose hemorrhage occurred at night and was not recognized until too late. Judging from other experiences, the hemorrhage could have been easily controlled by packing if it had been recognized earlier.

The method, therefore, combines in one procedure all the known effective principles in the treatment of chronic lung suppuration; namely, drainage, compression and extirpation of the diseased tissue. In fact, it accomplishes each of these principles more effectively than other procedures. The drainage, for example, is copious because of the cross section of the bronchial tree and the creation of multiple bronchial fistulas; moreover, it is our custom to facilitate it by inserting an aspirating device into the open fistulas once a day or oftener as soon as the slough has separated from the wound. This is the principle of bronchoscopic drainage, but it can be more effectively carried out through the open bronchi than through the trachea. Likewise, compression of the affected portion of lung can be carried out more effectively and more precisely by this method than by pneumothorax or thoracoplasty, because the degree of pressure can be regulated simply by the amount of packing in the wound. Finally, as regards extirpation, since the lobe does not need to be mobilized there is no exposure of mediastinal pleura, pericardium, etc., to infection such as occurs in the case of the ordinary lobectomy. The chief factor in the operative mortality of lobectomy, suppurative mediastinitis, is therefore absent in this procedure. On the contrary, in the cautery pneumectomy an effort is made always to stay inside the lung tissue.

The method is applicable also not only to the cases of unilateral chronic lung suppuration but to the hitherto practically hopeless bilateral cases; and Singer and I used it successfully in one such case. We have used it also successfully in the removal of a portion of lung that not only contained a chronic abscess but was tuberculous [6] as well, in a man, aged 62, who, although completely incapacitated and bedridden for two years before his operation, is now at work again, free from symptoms, having gained 30 pounds (13.6 kg.). Likewise, it has been used, with at least temporary success, by Brun of San Francisco in two cases of primary carcinoma of the lung.

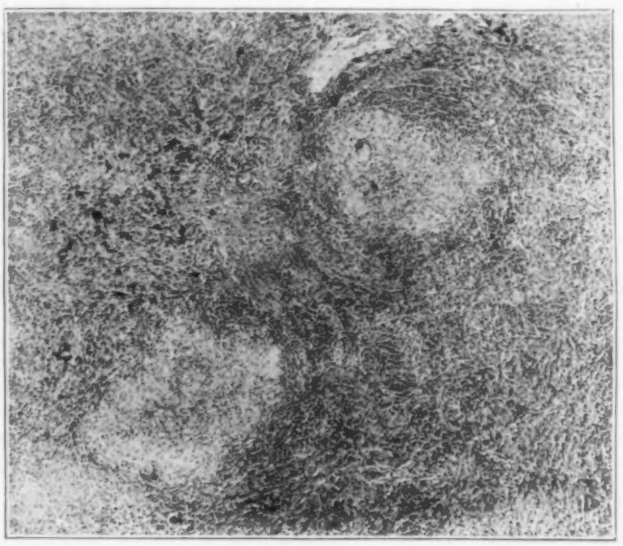

Fig. 4.—Section of fragment of lung removed at operation, showing undoubted evidence of tuberculosis.

Our results in treating thirty-one cases of chronic lung suppuration by this method are given in the accompanying table.

Results of Cautery Pneumectomy in Thirty-One Cases of Chronic Lung Suppuration

	Number	Per Cent.
Free from symptoms and completely healed	6	19
Free from symptoms, but with remaining bronchial fistula	11	36
Marked improvement, but with some cough still present	4	13.5
Recent cases still in hospital	2	6.5
Not heard from	1	3
Dead	7	22

Of those patients who are classed in the table as "free from symptoms, but with remaining bronchial fistula," all are well except for the slight annoyance of

4. Hedblom, C. A.: Graded Extrapleural Thoracoplasty in the Treatment of Diffuse Unilateral Bronchiectasis, Arch. Surg. **8**: 394 (Jan.) 1924.

5. Graham, E. A.: Cautery Pneumectomy for Chronic Suppuration of the Lung: A Report of Twenty Cases, Arch. Surg. **10**: 392 (Jan.) 1925.

6. The tuberculosis was discovered accidentally after having the lung exposed, and was confirmed by microscopic examination of removed fragments. The sputum examinations had failed to reveal tubercle bacilli. It is not intended to advocate this procedure in the treatment of tuberculosis, but only to cite this case as illustrating the possibility of the successful eradication of tuberculous tissue from the lung in this way.

the fistula. This merely necessitates the wearing of a small dressing over the fistulous opening, which is changed by the patient as often as desired. The secretion from it, as a rule, is about the same as that from the nose. In reality, 55 per cent. of the patients can be considered as well, and all who are not dead are greatly improved. A total of 74 per cent. are known to be either free from symptoms or improved. Seven deaths in a series of thirty-one cases would seem to be a high mortality. On the contrary, not only is it lower than with other operative procedures for this condition, but actually probably only one death in this series was due to the operation itself; namely, the case of hemorrhage mentioned above. Four of the seven deaths were due to cerebral complications, apparently embolism, and occurred in some instances several weeks after the last cauterization. This incidence of 12.9 per cent. of cerebral complications is the same as their spontaneous incidence in association with lung suppurations. As has been already noted by Tuffier,[7] for example, there is a spontaneous incidence of 13 per cent. of brain abscess

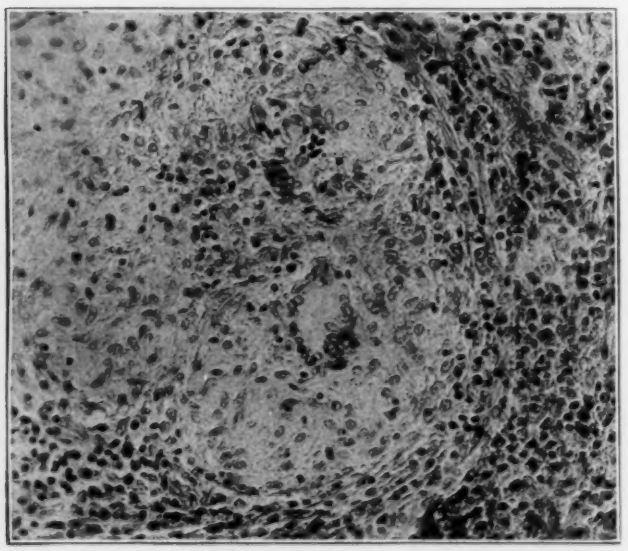

Fig. 5.—Higher magnification of same section.

in association with lung suppurations, regardless of whether or not any operation has been performed. In order, however, to minimize any possible liberation of septic emboli from the lung as a result of the operation, during the last few months we have been in the habit of passing deep massive ligatures of braided silk through the exposed lung tissue, which are tied before cauterization is begun. This procedure possibly also minimizes hemorrhage and encourages the destruction of more lung tissue. The other three deaths were found later to be associated with unrecognized abscesses in other viscera and the patients would not have been subjected to the cautery pneumectomy if the presence of the other abscesses had been known.

There are various auxiliary measures which we have found to be of great assistance. Of these, one of the most important is the clearing up of any suppuration in the nasal sinuses. There is unquestionably an intimate relationship which often occurs between chronic nasal and chronic pulmonary suppuration. Another procedure of importance is the administration of arsphenamin in those cases accompanied by a spirochetosis. Although the spirochete often found in the pus from these cases has nothing to do with the spirochete of syphilis, it nevertheless is usually effectively combated by arsphenamin. Heliotherapy is of great value, and it should be carried out systematically in all cases. Generous diet and maintenance of the nutrition of the patient are likewise important.

7. Tuffier, quoted by Sauerbruch, F.: Chirurgie der Brustorgane, Berlin, Julius Springer **1**: 569, 1920.

SUMMARY

Many patients with pulmonary suppuration will recover without surgical intervention. The surgical indications at present are not clearly established. Pneumothorax, bronchoscopy, etc., are very useful but have their limitations. In the chronic cases the operation of cautery pneumectomy combines in one procedure all the principles known to be effective. This method has also been used successfully in a case of localized pulmonary tuberculosis in a man, aged, 62, although of course it is not intended to advocate this procedure as a method of treatment of pulmonary tuberculosis. It has also proved itself effective in bilateral chronic suppuration.

PUNCTURE OF THE CISTERNA MAGNA

A SUMMARY OF FIVE YEARS' EXPERIENCE*

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Since Wegeforth, Ayer and Essick,[1] in the early part of 1919, worked out the anatomic relationships of the cisterna cerebellomedullaris, and Ayer,[2] in 1920, made his first report of the clinical use of puncture of the cisterna magna, this procedure has grown of increasing importance from the diagnostic as well as the therapeutic point of view.

One cannot help but feel that this operation has not reached the internists, pediatricians and general practitioners for whom it should be of the greatest clinical importance in the early treatment of diseases, especially epidemic cerebrospinal meningitis. The main drawback is that it has been considered a procedure for specialists. This fact limited its employment to a comparatively small group, mainly neurologists and neuropsychiatrists who have made careful studies of the cadaver as emphasized by Ayer in all his reports. However, with the extension of graduate courses and demonstration clinics, knowledge of the value and method of the operation should be made available for all physicians, especially for the internists and general practitioners who make the diagnoses of meningitic infections first and who see the cases early, before they are brought to the attention of the specialist. A knowledge concerning this procedure and special indications for early intracistern administration of serum would result in further profitable cooperation between the internists, general practitioners and neurologists. It, in fact, can be performed with safety by any physician who can perform lumbar puncture, and who has done many cistern punctures on the cadaver.

* From the Philadelphia General Hospital and the Colorado Psychopathic Hospital, University of Colorado.

1. Wegeforth, Paul; Ayer, J. B., and Essick, C. R.: The Method of Obtaining Cerebrospinal Fluid by Puncture of the Cisterna Magna, Am. J. M. Sc. **157**: 789 (June) 1919.

2. Ayer, J. B.: Puncture of the Cisterna Magna, Arch. Neurol. & Psychiat. **4**: 529 (Nov.) 1920.

Since Ayer's papers have been presented, his method and technic for puncture of the cisterna magna have not been improved, and owing to his unusually careful research and description of the landmarks, there is little likelihood of there ever being any substantial change in his original description. Therefore, for information regarding the technic and method of puncture of cisterna magna, one refers directly to his original articles. I wish, however, to review my experience with this procedure, and this is desirable since occasionally one encounters considerable skepticism regarding the clinical application and usefulness of puncture of the cisterna magna.

During the last five years, I have performed approximately 1,550 punctures of the cisterna magna in a total of 190 patients. No serious accidents have occurred in this group of patients. In fact, from the standpoint of safety, it compares favorably with a similar number of lumbar punctures performed. In one case (tuberculous meningitis) in which the cisterna magna had been distorted by blockage, a small vein from the spinal plexus was perforated.[3] However, little hemorrhage resulted and the vein thrombosed, as was proved by necropsy a week later. In another case of terminal cerebrospinal meningitis in which treatment was started late, death occurred shortly after administration of intracistern injection of serum. Since pulmonary edema was really advanced at the time of treatment, it was realized by all attending physicians that this was a measure of last resort to help the patient, and death certainly could not be attributed to the operation. The facility of this operation is an important indication for its use. In another puncture performed by an inexperienced intern on a moribund patient with tuberculosis meningitis, the perforation of a posterior spinal vein resulted in a hemorrhage which surrounded the entire medulla, shown in the accompanying illustration, a striking lesson of the danger and necessity for caution regarding the technic of this puncture. Forty other cases were examined post mortem with no evidence of any pathologic changes. One of these patients had had twenty-six intracistern injections. The clinical indications for puncture of the cisterna magna are: (1) therapeutic; (2) diagnostic; (3) prophylactic. My experiences may be thus summarized:

A. Therapeutic use of cistern puncture:
   1. Injection of arsphenaminized and tryparsamidized serum in treatment of general paresis: 1,340 punctures for a total of 110 patients; greatest number of treatments in any one case, twenty-six.
   2. Treatment of acute epidemic cerebromeningitis. Number of cases, eight (advanced type). Recoveries, five. Number of injections, thirty-two; average of 20 c.c. per injection. Treatment consisted of alternate injections of serum in the cisterna magna and the lumbar region.
   3. Treatment of tetanus. One case; two treatments did not save patient.
   4. Therapeutic drainage. Fifty-four punctures, twenty patients. Combined puncture with irrigation of modified Ringer's solution. Two cases, three punctures. Traumatic meningitis. Tuberculous meningitis.

B. Diagnostic use of cistern puncture:
   1. Diagnosis of subarachnoid block (combined puncture). Fifteen cases; seven showed definite findings of spinal block which were all verified by operation or necropsy. Total punctures, twenty.
   2. Localization of spinal cord tumors through use of lipiodol. Three cases, three punctures.
   3. Localization of site of hemorrhage. Four cases; one mistake in diagnosis.
   4. Cistern puncture done when lumbar puncture was impossible; twenty-seven cases.

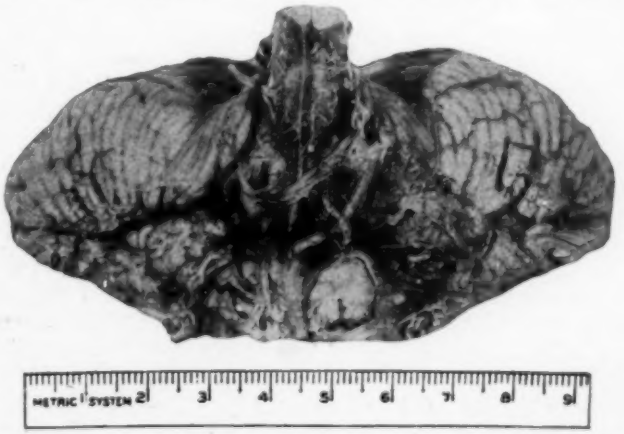
C. Prophylactic use of cistern puncture:
   Prevents possibility of block following meningitis.

3. Ebaugh, F. G., and Patten, C. A.: Tuberculous Meningitis, Arch. Neurol. & Psychiat. 11: 707-710 (June) 1924.

THERAPEUTIC INDICATIONS

The chief clinical use of cistern puncture is found in the injection of antimeningitic serum in the treatment of epidemic cerebrospinal meningitis. Since the cisterna magna, as pointed out by Ayer, has the strategic position as the distributing center of the spinal fluid to both the cerebral subarachnoid space and the spinal subarachnoid space, injection of serum at this site is clearly indicated, especially since meningitis is in the beginning a cerebral infection. Therefore, the injection of serum near the site of disease in maximum concentration should result in a much better therapeutic result and dissemination than serum injected in the lumbar subdural space.

The injection of India ink in quantities of 20 c.c. in the lumbar region results in little staining at the base



Hemorrhage surrounding entire medulla and pons following cistern puncture on a moribund patient with tuberculous meningitis.

of the brain. The injection of ink in the cisterna magna results in a uniform straining of the cerebral subarachnoid space. The evidence, therefore, is that in treatment by the cistern route the serum is more widely spread and is under maximum concentration nearer the site of the disease than when the lumbar puncture method is used alone. Since one has a generalized meningeal infection to deal with, it is advisable to treat both the upper and the lower cerebrospinal fluid reservoirs. I have preferred alternate intracistern and lumbar injections of serum. The result in the eight cases indicates the advisability of this procedure. This treatment will be referred to later as one that should possibly prevent the possibility of spinal subarachnoid block.

I have used the intracistern approach in treatment of meningitis in eight cases, all of which were of advanced type. Five of these patients recovered entirely.

The intracistern route is also employed for the injection of arsphenaminized serum according to the Swift-Ellis technic in the treatment of neurosyphilis. Unfortunately, this procedure was very discouraging in my hands [4] and has been discontinued.

4. Ebaugh, F. G.: The Treatment of General Paresis by the Intracistern Route, Arch. Neurol. & Psychiat. 7: 325 (March) 1922.

Its use in cases of traumatic meningeal infections, combined with lumbar puncture for irrigation with modified Ringer's solution, offers an additional therapeutic indication for puncture of the cisterna magna.

This route was used in one case in the treatment of tetanus. Observers disagree, however, regarding the advisability of intraspinal treatment of this disease.

DIAGNOSTIC INDICATIONS

The main diagnostic indications are: (1) for the diagnosis of spinal subarachnoid block such as frequently follows acute epidemic cerebral spinal meningitis; (2) for the diagnosis of cord compression from any cause, especially spinal cord tumors; (3) for accurate localization of spinal cord tumor following the injection of lipiodol [5] and roentgenographic studies, and (4) for the localization of sites of hemorrhage.

The diagnosis of these conditions requires combined lumbar and cistern punctures. For instance, in seven cases the findings with combined puncture indicated cord compression, caused by a tumor. The use of combined puncture led to a definite diagnosis of cord compression, and was, therefore, the final diagnostic procedure showing advisability of an early operation. Often if this procedure had been performed many months sooner, the same definite diagnosis of cord compression could have probably been made. The importance of increase in cerebrospinal pressure, after occluding the jugulars, is well demonstrated in these studies, as well as the hydrodynamic and hydrostatic tests originally described by Ayer.

The third indication for puncture of the cisterna magna, which I have termed prophylactic, constitutes a very obvious use for this clinical procedure; i. e., that puncture of the cisterna magna can be used to prevent the possibility of spinal subarachnoid block following acute cerebromeningitis, especially if alternate injections of serum by the intracistern and lumbar route are employed. I feel that by this method, all areas, both the cerebral subarachnoid space and the spinal subarachnoid space, will be treated with continued maximum concentration of serum, and that the possibility of subarachnoid block will be prevented.

Since I have not had a great opportunity to try out this procedure, this indication is given mainly to suggest this routine treatment of epidemic cerebrospinal meningitis, so that resulting subarachnoid block may be obliterated.

The five recovery cases mentioned, despite the fact that all patients were in extremely critical condition on admission to the hospital, suggest that the use of combined lumbar and intracistern injections of serum is practical and efficacious from a therapeutic standpoint.

The clinical usefulness of puncture of the cisterna magna would seem to justify further exploitation among the internists, pediatricians and general practitioners, who could thereby see that their cases are treated early with this method. Extension courses are necessary to further knowledge and to do away with the slight skepticism that may be present regarding this operation.

4200 East Ninth Avenue.

5. Ebaugh, F. G.: The Use of Lipiodol in the Localization of Spinal Lesions, Am. J. M. Sc., June, 1925.

Goiter and Iodin.—Although the immediate cause of endemic goiter, so far as the individual is concerned, may be that iodin sufficient for proper metabolism is for some reason not obtained, this does not eliminate the necessity for theories as to the causation of endemic goiter.—Blacklock.

FLACCID PARAPLEGIA *

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AND
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Our object is to report two cases of flaccid paraplegia of rather unusual origin.

Flaccid paraplegia is a flaccid paralysis of two corresponding extremities, and is the antithesis of spastic paraplegia. It may result from many causes, of which the most common are: (1) section of the cord from direct trauma, such as bullet and stab wounds; (2) compression as a result of fracture, dislocation, spondylithiasis, extramedullary neoplasm or hemorrhage; (3) infections, such as tuberculosis, syphilis, poliomyelitis, malaria, septic meningomyelitis and abscess; (4) simple degeneration or myelomalacia, accompanying diseases of the hematopoietic system and thrombosis; (5) exogenous toxins, such as lead and alcohol; (6) unknown etiology, such as Landry's disease, and (7) congenital defects, such as abiotrophy and intrauterine paralyses.

Fig. 1.—Thrombosed aorta.

The symptoms of flaccid paraplegia are: (1) paralysis; (2) loss of reflexes; (3) flaccidity; (4) atrophy; (5) vasomotor disturbances, and (6) sensory disturbances.

The following two cases are sufficiently unusual to warrant recording:

CASE 1.—A pedler, aged 40, Russian, married, entered the City Hospital of New York, Dec. 25, 1924, complaining of dif-

* Read before the Section on Nervous and Mental Diseases at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

ficulty in breathing and of pains in the chest. He smoked to excess, but did not use alcohol and there was no history of syphilis. The history failed to disclose any previous illnesses. On admission his temperature was 101.4; pulse, 120, and respiration, 30.

The physical examination showed that he was suffering from acute bronchitis, acute pharyngitis and bronchopneumonia. The pupils were small and irregular, and reacted slowly to light.

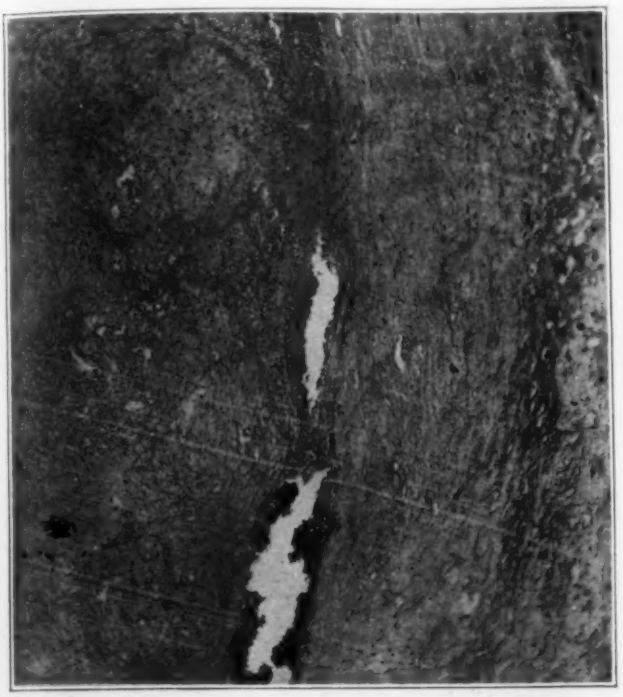

Fig. 2.—Thrombus, at left, and wall of aorta, at right as seen under low power; between them are two small channels containing blood; hematoxylin-eosin stain.

The throat was red, with whitish gray patches extending from the left side of the uvula to the upper pole of the right tonsil. They were membranous in appearance and so adherent that they could not be removed. The submaxillary nodes were palpable. There was no thyroid enlargement. The heart was rapid but otherwise normal. The spleen was not felt, and the liver did not extend below the ribs. The knee jerks were active and equal. There was no Babinski reflex and no clonus. The examination of the lungs showed roughened breath sounds and moist râles throughout both sides of the chest. In other words, the medical examiner concluded that this patient was suffering from acute bronchitis, acute pharyngitis, and early bronchopneumonia. The patches in the throat so resembled diptheritic lesions that the patient was immediately given 12,000 units of diphtheria antitoxin.

December 26, he became delirious. December 27, frank signs of patchy consolidation appeared at the bases of both lungs and there followed a straightforward attack of bronchopneumonia. The pneumonia gradually cleared up, the membrane on the throat disappeared, and the redness of the throat subsided.

The chemical examination of the blood was negative. The blood count showed 22,000 white cells, 95 per cent. polymorphonuclears and a normal red cell count. The urine was negative. The sputum was negative for tubercle bacilli. The Klebs-Loeffler bacillus was not found. A lumbar puncture showed a clear fluid under normal pressure with no globulin, a small amount of albumin, twelve cells and a normal colloidal gold curve.

About two weeks later, the patient was much better. The temperature was subnormal and the chest was clear. A new complication appeared two days later when he complained that his feet were painful and that his legs from the knees down were numb and cold. At this time the knee jerks were absent. Another spinal puncture was negative. The blood Wassermann reaction also was negative, so that the idea of neurosyphilis was rejected. A week later the patient sat up and appeared to be convalescing, although he still complained of pain in his feet and numbness and coldness in his legs. After sitting up for several days, some atrophy of the leg muscles developed. He was unable to stand without assistance. The knee jerks were still absent, the abdominal reflexes were absent, but the pain in the legs had disappeared. It was then decided to have a neurologic consultation.

The neurologic examination showed that he was unable to walk, owing to a paralysis of both legs. The knee jerks were absent. There was a double foot drop, slight atrophy of both legs, and distinct vasomotor changes. He presented a typical flaccid paraplegia.

Soon after, the patient again complained of severe pains of a burning character in both feet. He was then transferred to the neurologic service. The course of the case for the next ten days was uneventful and he seemed to present the typical course of a peripheral neuritis.

February 16, the condition became very unsatisfactory. The symptoms were unimproved and the general condition was worse. The temperature rose and the patient became delirious. He developed hallucinations and confusion. It was evident that some complication had occurred and that the original diagnosis was wrong. The white blood cell count was 13,000, with a polymorphonuclear count of 92 per cent., and there was a reappearance of the physical signs of bronchopneumonia. We concluded that this was a recrudescence. He was again kept in bed and treated for this pneumonia.

About February 21, a marked cyanosis of the fingers, ears and legs developed. A small area of dry gangrene about 6 cm. in diameter appeared over the external malleolus of the left leg. February 23, similar areas of gangrene appeared over both knee caps. He died that night.

The postmortem examination disclosed a thrombosis of the abdominal aorta beginning about 5 cm. above the bifurcation of the common iliacs and extending downward into the femoral on the right and just to the femoral on the left. The thrombus was reddish white, firm and well organized. From gross examination it appeared to obstruct completely the lumen of the aorta, both common iliacs and their external and internal branches.

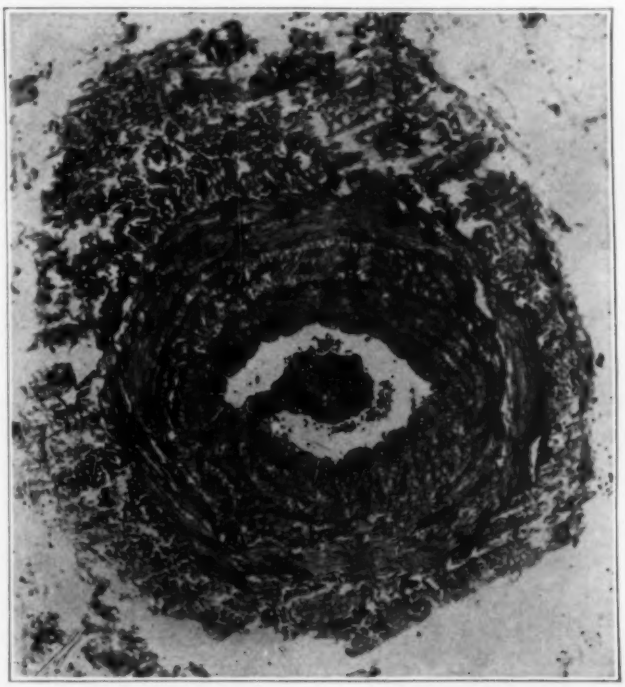

Fig. 3.—Branch of the dorsalis pedis with blood in the lumen, as seen under low power; atherosclerotic changes in vessel wall, with fragmentation of the elastic lamina; hematoxylin-eosin stain.

The other gross anatomic diagnoses were bronchopneumonia, chronic fibrous pleuritis and fibrinous peritonitis; chronic perihepatitis and perisplenitis; healed apical pulmonary tuberculosis, and arteriosclerosis of the aorta.

From the gross appearance of the thrombosed portion of the aorta and its branches, it appeared that the occlusion was complete. If this were true, the absence of more extensive gangrene required explanation. The microscopic examination furnished it. There was not complete obstruction to the circulation. In certain portions there was complete union between the thrombus and the intima of the aorta; in other portions there were small channels between the margin of the thrombus and the intima of the aorta containing blood. The dorsalis pedis and its branches also contained a moderate amount of blood. This small amount of circulation undoubtedly accounted for the absence of more extensive gangrene.

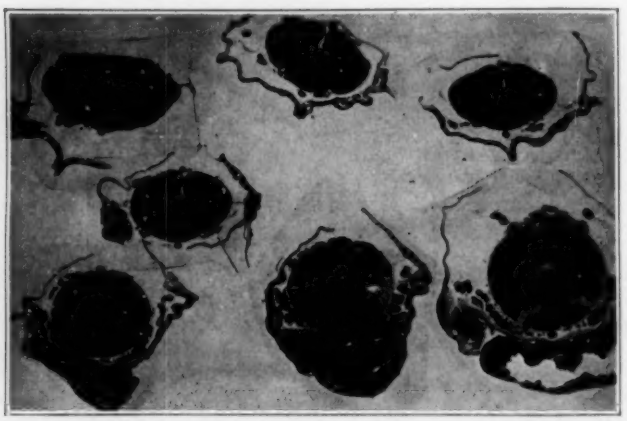

Fig. 4.—Cord sections at different levels; extradural hemorrhage in lower dorsal and upper lumbar segments, with demyelinization; Weigert-Pal stain.

The thrombus began as a mural one at a point where the intima had been damaged, therefore predisposing to this occurrence. Its growth was gradual and at no time was the circulation entirely cut off. The lower portion of the aorta was the seat of advanced atheromatous degeneration, with some areas of erosion of the intima with deposits of lime salts in the media.

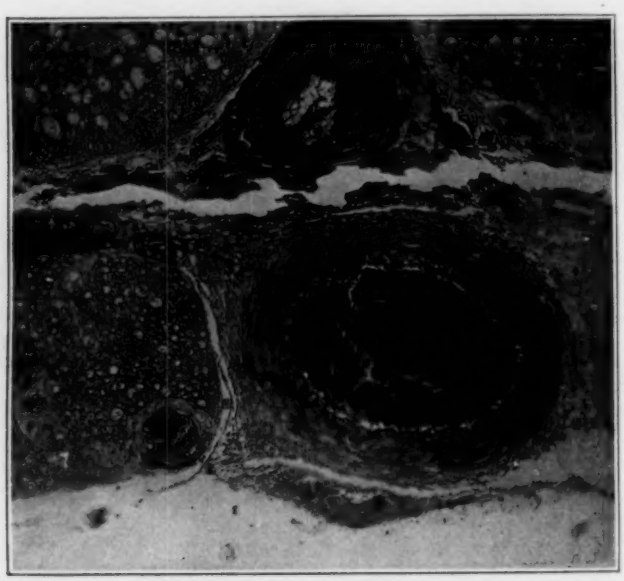

Fig. 5.—Thrombosis of anterior spinal artery at ventral fissure, as seen under low power.

CASE 2.—A housewife, aged 71, for four years had suffered with persistent pain in the right hip. This occasionally extended down the thigh and had been diagnosed as arthritis. One evening while undressing, she had an unusually severe pain in the abdomen and right hip and at once became very weak in both legs. Two days later she was brought to the hospital.

The neurologic examination showed, as in Case 1, complete motor paralysis of both legs with flaccidity. The knee jerks were absent. There was a beginning atrophy of the musculature of both legs. A sensory examination revealed complete anesthesia to all types of sensation from the hips down. The feet were in a position of complete extension, and there were slight vasomotor changes. In addition to these symptoms, the patient rapidly developed incontinence of both sphincters. In other words, she presented a typical flaccid paraplegia. In three days she contracted pneumonia, and nine days after admission she died.

The necropsy revealed a large extradural hemorrhage confined to the lower dorsal and lumbar region of the spinal cord but most extensive over the dorsal surface. The dorsal and ventral spinal arteries and veins were thrombosed, as were also many of the small pial vessels on the lateral surfaces. When the cord in the lower dorsal region was sectioned, degeneration of the lateral and dorsal columns could be detected grossly. The other gross anatomic diagnoses were bilateral lobular pneumonia, ascending urinary infection, chronic passive congestion of the liver, senile atrophy of the spleen, chronic interstitial pancreatitis, polyps of the cervix uteri, general arteriosclerosis, and chronic myocarditis.

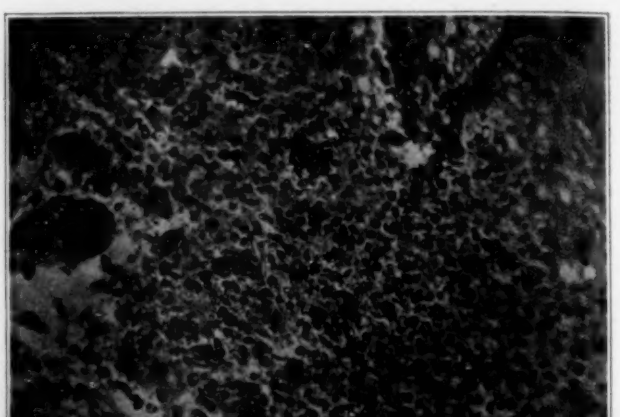

Fig. 6.—Ventral horn of spinal cord in lower dorsal region, showing glia cells containing fat (gitter cells); low power; Marchi stain.

Microscopic examination of the cord showed an extreme variability in the central canal. In the cervical region it was patent, and the ependymal cells had a regular arrangement quite similar to that seen in infants. In the upper dorsal region the lumen was obliterated, but in the mid-dorsal region it again became patent. The hemorrhage had dissected upward to approximately the mid-dorsal region. Both the pachymeninges and the leptomeninges were thickened, more so on the dorsal than on the ventral surface of the cord. Many of the pial arteries and the veins, more especially at the dorsal sulcus and the ventral fissure, were thrombotic. Just below the mid-dorsal region of the cord there was an increase in the ependymal cells. They were heaped up in several layers, and small cell groups of from three to six cells could be seen completely detached from the area around the obliterated central canal. Some of these groups had a rosette arrangement resembling the cell grouping seen in gliomas.

In the lower dorsal region, the gray matter was the seat of an intense reaction on the part of the glial elements involving all four horns. At first glance the pathologic sections gave the impression of an epithelial tumor. The cells varied greatly in size. Some were small, with pyknotic nuclei. Others were large and vesicular, with two or more nuclei. The nuclei of the small

cells were round and deeply stained. Other cells possessed large oval, polyhedral and kidney shaped nuclei. Some of the nuclei were central in location and others eccentrically placed. The staining reactions of the nuclei likewise showed considerable variability, some being deeply stained and containing a fairly dense chromatin network, whereas others were hypochromatic There was an increased vascularity in both the gray and the

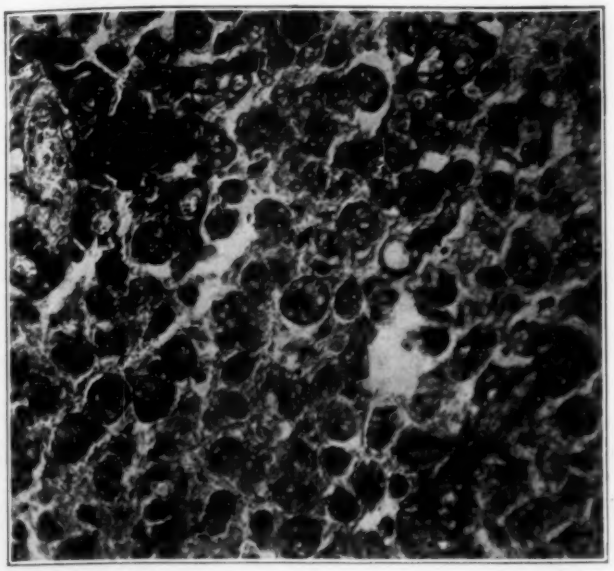

Fig. 7.—Portion of a ventral horn of the spinal cord in the lower dorsal region, showing large glia cells laden with lipoidal and fat droplets; high power; Marchi counterstained with phosphomolybdic acid hematoxylin.

white matter. Small, thin-walled capillaries were especially abundant in the gray matter.

The ganglion cells of the ventral horns were absent in the lower dorsal and upper lumbar regions, and in adjacent segments above and below this level showed various degenerative changes. Many of the cells that remained were swollen and devoid of tigroid except around the periphery of the cell (central chromatolysis). Some of the ganglion cells were nearly filled with fat. The nuclei of many cells were eccentric, and the dendrites were short and stubby (atrophy). In others, both the nuclei and the tigroid had disappeared entirely, and the cells were small and elongated.

Marchi stains demonstrated that the glia cells contained fat, thereby identifying the process as a reaction secondary to the ischemic degeneration.

In the immediate vicinity of the hemorrhage there was almost complete demyelinization of the white matter, except in the juxtagriseal zones of the dorsal, lateral and ventral columns. The white matter had a honeycombed appearance, but there was practically no ascending or descending degeneration. The changes in the white matter were not accompanied by inflammatory reaction but were similar to those seen in myelomalacia. Large fat granular glia cells were scattered through the demyelinized areas.

This represents a case of extensive softening and degeneration of the spinal cord following an extradural hemorrhage. The hemorrhage induced mechanically a thrombosis of the vessels that furnish the blood supply to the cord, the resultant pathologic change being one of ischemic softening.

As would be expected from the extensive degeneration of the gray cornua and white columns of the cord, the clinical picture was that of complete flaccid paralysis, complete anesthesia to all types of sensation below the level of the lesion, bladder and rectal incontinence, and atrophy of the musculature of the lower extremities.

41 East Sixty-third Street—55 East Seventy-sixth Street.

Clinical Notes, Suggestions, and New Instruments

ANEURYSM OF THE AXILLARY ARTERY*

J. S. HORSLEY, JR., M.D., RICHMOND, VA.

Aneurysms of neither traumatic nor syphilitic origin are unusual. The case here reported is an aneurysm originating from an infected embolus. Reports of such cases are seldom encountered in current medical literature.

REPORT OF CASE

Miss B. W., aged 23, entered St. Elizabeth's Hospital, March 25, 1924, complaining of a "tumor under the right arm." Her family history and past history were irrelevant. Seven weeks before admission to the hospital, an aching pain began in the right arm. A few days later, the fingers began to feel numb. The numbness gradually spread up the arm. Accompanying this was a paralysis of the fingers of the right hand, and a weakness of the entire right forearm and arm. Four weeks previous to admission, the patient's mother first noticed a round tumor in the right axilla. This mass was about the size of a hickory nut, and was tender on pressure. It gradually increased in size, and decreased in tenderness. Aside from a slight general weakness on exertion, and a questionable history of a mild degree of fever for a short time preceding coming to the hospital, the patient noticed no other symptoms. There was no history of syphilis or trauma.

The patient was moderately pale, small, and poorly nourished. The pulse rate was 120 a minute; temperature, 101.8 F., and respirations, 28 a minute. A smooth, oval, slightly tender and moderately firm mass presented along the anterior fold of the right axilla (Fig. 1). It had an expansive type of pulsation, a definite to-and-fro murmur could be heard over it, and a thrill was perceptible along its proximal border. The muscles about the right shoulder were atrophied, and there was paralysis of practically the entire right upper extremity.

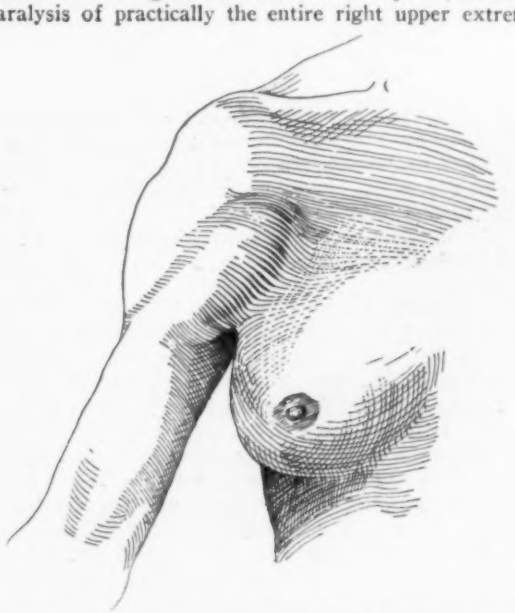

Fig. 1.—External appearance of aneurysm of right axillary artery.

All sensation (touch, pain, temperature, etc.) was lost over the area distal to the tumor, except for moderate impairment over the medial surface of the arm and the dorsum of the hand. Pulsation of all the vessels distal to the tumor was absent.

The cardiac apex impulse was in the fifth intercostal space, about 11 cm. from the midline, and dulness extended to about 8 cm. in the fourth intercostal space. There was a visible,

* From the Surgical Department of St. Elizabeth's Hospital.
* Read before the Junior Clinical Club, Richmond, Va., April 7, 1924.

diffuse, precordial pulsation, and no thrill. The first sound at the apex was of good muscular quality. There were harsh systolic and diastolic murmurs, which could be heard at all auscultatory areas, loudest at the mitral and aortic areas, and transmitted to the neck and axilla. The pulse rate was 120 a minute, regular in force and rhythm. The blood pressure was 113 systolic and 40 diastolic in the left arm, and absent in the right.

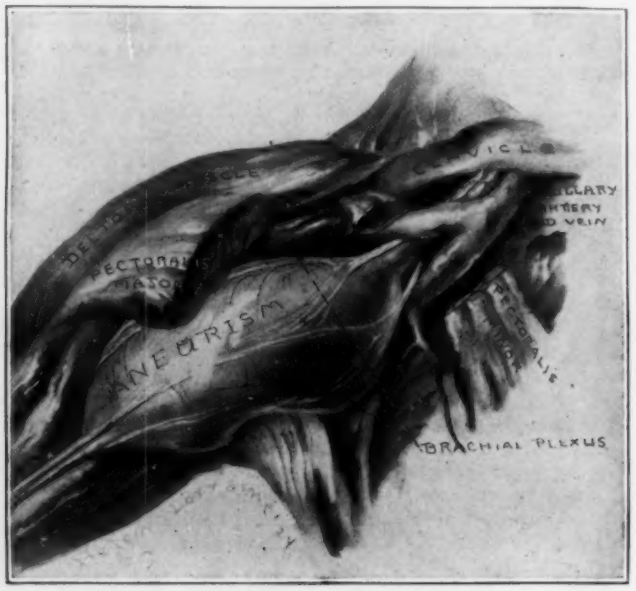

Fig. 2.—Appearance at necropsy of aneurysm of right axillary artery. The marked stretching and flattening out of the nerves of the brachial plexus which surround the aneurysm sack may be noted.

The rest of the physical examination was negative except for a scoliosis and a moderate vaginal discharge, which showed many diplococci, staphylococci, long chained streptococci and large bacilli, but no gonococci. Roentgenologic examination of the right shoulder and arm showed no pathologic changes in the bones. The white blood count on admission was 11,240, with 77 per cent. neutrophils, and two days later was 18,400, and 86 per cent. neutrophils. The blood Wassermann reaction was negative, and a blood culture showed diplococci and short chained, nonhemolytic streptococci.

A diagnosis of septic endocarditis, nonhemolytic streptococcic septicemia, and aneurysm of the right axillary artery was made.

The temperature ranged between 100 and 102 F., and the pulse remained about 120. Three days after entrance the patient had a sudden pain across her forehead and became unconscious. There was profuse perspiration, though no further paralysis. Consciousness was regained in ten minutes. Four hours later a second attack of unconsciousness ensued, from which she recovered only partially, several hours later. A diagnosis of cerebral embolism was made.

On account of the positive blood cultures and her critical condition, 20.5 c.c. of a freshly made 1 per cent. solution of mercurochrome-220 soluble (equivalent to 5 mg. per kilogram of body weight) was given intravenously, with practically no subsequent reaction. Within eight hours the temperature was normal and remained so for thirty-six hours. Blood cultures taken the day following the injection were reported negative by the bacteriologic laboratory of the Richmond Health Bureau, and doubtfully positive after forty-eight hours' growth by our laboratory. Forty-eight hours after the first injection, the temperature rose again to about 101 F., and a second intravenous injection of 20.5 c.c. of a freshly made 1 per cent. solution of mercurochrome-220 soluble was given. During the following twenty-four hours, there was a moderate reaction consisting chiefly of a slight diarrhea. There was only a very small drop in the temperature and temporary improvement. Blood cultures were negative the day after injection. Five daily intravenous injections of sodium cacodylate (0.2 gm.) were also given.

On the seventh day in the hospital the pulse became more rapid, irregular and weak, the respirations more labored, and the patient died.

A postmortem examination limited only to the aneurysm was consented to by the patient's family. About 5 cm. from the clavicle, the axillary artery seemed to have "blown out." The nerves of the distal portion of the brachial plexus were very much compressed and stretched out by the aneurysmal sac, giving ample explanation for the paralysis and loss of sensation in the right upper extremity (Fig. 2). The wall of the aneurysm was disintegrating and very thin, and most of it was filled with blood clots. On the distal side the artery was occluded with an old thrombus, which seemed partially organized.

COMMENT

This case presents three interesting features:

1. A very unusual type of aneurysm of the right axillary artery, the development of which was apparently caused by both the mechanical and the infectious factors produced by a septic embolus complicating a septic endocarditis.

2. The rather uncommon condition of septic endocarditis with positive blood cultures showing short chained, nonhemolytic streptococci, and the development of a fatal cerebral embolism.

3. The apparent benefit of the intravenous use of mercurochrome-220 soluble in streptococcic septicemia.

617 West Grace Street.

A PORTABLE OXYGEN TENT*

ALVAN L. BARACH, M.D., AND CARL A. L. BINGER, M.D.,
NEW YORK

In recent years the therapeutic use of oxygen has undergone a new trial. Effective methods of administration have been introduced, and a study of the changes in the oxygen content of the arterial blood during treatment has been made. The

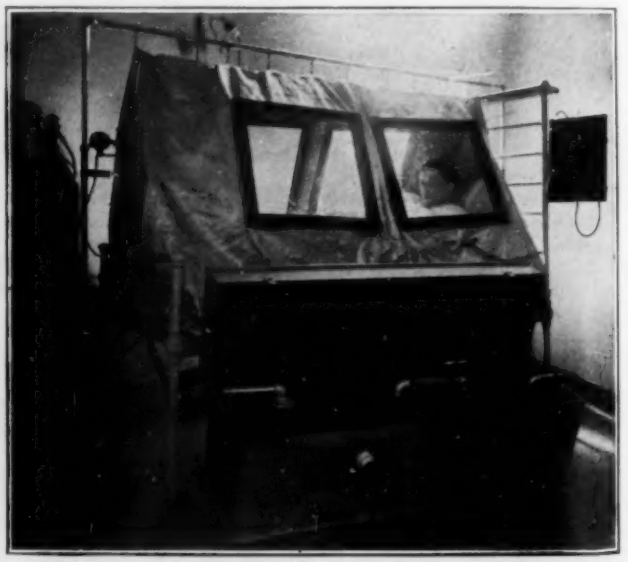

Fig. 1.—Portable oxygen tent.

results indicate that the adequate employment of oxygen in conditions of acute anoxemia is generally followed by clinical improvement, and that an abnormally low arterial oxygen saturation is usually restored to, or near to, the normal value. In no report in which oxygen has been effectively administered is a contrary view upheld. Opinions based on expe-

* From the Department of Medicine, Columbia University College of Physicians and Surgeons, and the Presbyterian Hospital, and the Hospital of the Rockefeller Institute for Medical Research.

riences with ineffective methods are no longer germane to effective oxygen treatment.

Haldane[1] says: "In the light of present knowledge it is childish to suppose that as soon as anoxemia is relieved a patient will recover, or that anoxemia is itself a trifling matter if life is not immediately imperiled. If there were only one clinical lesson derived from a perusal of this book, I hope it would be that anoxemia is a very serious condition, the continuance of which ought to be prevented if at all possible." Additional information is needed to determine more precisely the value of oxygen therapy. This is especially true of pneumonia, in which oxygen want is a frequent occurrence. We have devised an additional apparatus designed to meet certain desirable conditions not heretofore fulfilled.

There have already been reported various types of apparatus by which oxygen may be effectively administered. For effective oxygen therapy the inhaled air must contain between 30 and 60 per cent. of oxygen, preferably in most cases between 40 and 50 per cent. Methods that accomplish this are those described by Meltzer,[2] Haldane,[3] Barach[4] and Henderson.[5] In these methods a mask or mouthpiece or, more recently, a nose piece[6] is used for purposes of administration. The oxygen chambers as developed by Barcroft,[7] Poulton,[8] Stadie[9] and Binger[10] represent methods in which continuous oxygen inhalation is naturally accomplished with the additional advantage of precise regulation of the desired oxygen concentration and unhampered nursing facilities. The bed tent of Leonard Hill[11] represented an attempt to reproduce certain of these advantages. Recently, Roth[12] has advised a head tent which seems excellently adapted to meet the requirements for effective oxygen treatment.

The apparatus here reported provides continuous oxygen therapy by enclosing the patient in a relatively air tight compartment containing an increased concentration of oxygen. It satisfies the following requirements:

1. Regulation of the precise oxygen concentration desired.
2. Adequate removal of carbon dioxid, moisture and heat.
3. Ease of installation.
4. Ease of operation to include the maintenance of a constant oxygen concentration, the removal of carbon dioxid, heat and moisture, and the use of simplified methods for determining the oxygen and carbon dioxid concentrations.
5. Ease of access to the patient on the part of nurses.
6. Portability so that it may readily be set up in a private residence.
7. Absence of any restraints on the patient in the form of appliances to his face or body.
8. A small utilization of oxygen.

With these principles in mind, a small oxygen chamber was constructed to surround the patient in bed. It consists of a simple pitched roof tent of the inverted V type, with the bottom open and with a horizontal flange around its base 1 foot wide. There is a sheet of the same material having the same measurements as the periphery of the flange on the tent. The tent is suspended over the bed, with the patient in bed, from an aluminum frame, the horizontal sheet having previously been laid under the mattress. The flange of the tent and the sheet are then rolled together and held by means of clamps to make a tight closure. The patient is thus simply and quickly enclosed in a relatively air-tight compartment 6½ feet long, 3 feet wide and 4 feet high at the center. The material is a rubberized fabric specially constructed with three-ply layers of cotton cemented by rubber tissue. Its permeability for hydrogen is 11 liters per square meter for each twenty-four hours; for oxygen, about half as great.

On each side of the tent are two glass windows, 2½ feet long and 2 feet wide. These windows are set in wooden frames, fastened by appropriate screw clamps, and may be taken off in about ten seconds. Ready access to the patient is thus afforded for the giving of nourishment, for clinical observation and for treatment. When a larger opening is desired, the clamps at the side are pulled off and the flap is lifted, a process that takes no more than a minute. If it is desired to have complete access to the patient, the clamps on all four sides may be removed and the tent pushed to the side of the room in three or four minutes. There is still another opening near the head end, 1 foot in diameter, and surrounded by a sleeve of the fabric 1½ feet long, designed to admit the attendant's hand.

The ventilation of the tent is accomplished by an external closed circuit which provides an oxygen rich atmosphere freed from carbon dioxid, heat and excess moisture. Besides this there is a small fan in the tent to keep the air in motion. The motor that drives this fan is, of course, outside the tent. Air circulation is maintained by a positive pressure blower

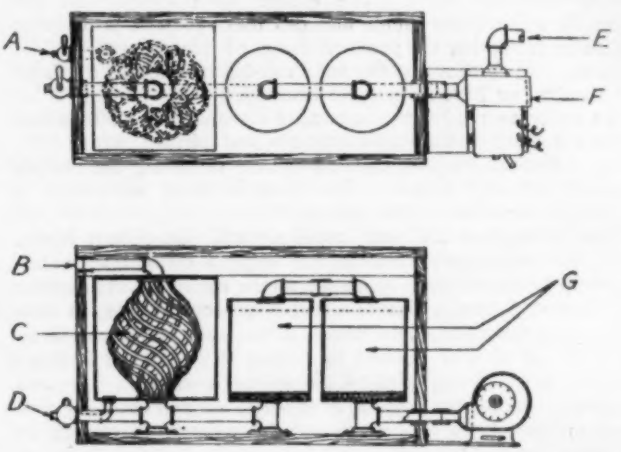

Fig. 2.—Power unit for oxygen tent: *A*, tank drain cock; *B*, outlet to tent; *C*, cooling coil; *D*, pipe drain cock; *E*, inlet from tent; *F*, motor blower; *G*, soda-lime cans.

driven by a motor of one-sixth horse power, which is capable of delivering 150 liters a minute. The circulating air is passed through two copper canisters, the first containing soda-lime to remove carbon dioxid, and the second anhydrous calcium chlorid to remove moisture. It is then run through a copper cooling coil, from which it is conducted by 1 inch corrugated rubberized tubing to the foot end of the tent. As it passes into the tent, a small inlet tube admits oxygen. At the head end of the tent, a 1 inch outlet is provided which returns the air to the blower. Projecting into the tent through the foot end is a small fan. This fan is propelled on a 10-inch shaft by a small motor outside the tent. The purpose of this fan is to assure adequate air motion within the tent.

Both motors are completely removed from contact with the tent atmosphere, so that no sparks can arise in the oxygen rich mixture. The soda-lime and calcium chlorid canisters are each 12 inches high and 10 inches in diameter. The lids of both may be easily removed for inspection and refilling. Ten pounds (one can) of soda-lime lasts for two days of continuous use, and one can of calcium chlorid for from one to two days.

The cooling coil consists of twelve small one-fourth inch pipes placed in a copper tank containing either ice water or a salt ice freezing mixture. In the former instance, air may enter the cooling coil at from 20 to 25 C., and leave at from 3 to 5 C.; in the latter, it may leave at —5 C. The tent material radiates little heat, so that most of the cooling is

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3. Haldane, J. S.: Brit. M. J. **1**: 181 (Feb. 10) 1917.
4. Barach, A. L.: A Simple Apparatus for Administering Oxygen, J. A. M. A. **78**: 334 (Feb. 4) 1922.
5. Henderson, Yandell; and Haggard, H. W.: The Treatment of Carbon Monoxid Asphyxia by Means of Oxygen + CO_2 Inhalation, J. A. M. A. **79**: 1137 (Sept. 30) 1922.
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7. Barcroft, J.; Hunt, G. H., and Dufton, Dorothy: Quart. J. Med. **13**: 179 (Jan.) 1920.
8. Poulton, C. P.: Personal communication to one of the authors (C. A. L. B.).
9. Stadie, W. C.: J. Exper. Med. **35**: 323 (March) 1922.
10. Binger, C. A. L.: Mod. Hosp. **24**: 186, 1925.
11. Hill, Leonard: Proc. Physiol. Soc. **1**: 20, 1921.
12. Roth, P.: Bull. Battle Creek Sanit. & Hosp. Clin. **19**: 178, 1924.

accomplished through the coil, which keeps the temperature inside equal to the temperature of the room. On cold days with the windows of the room open, ice is sufficient to cool the inside atmosphere, but on warmer days an aluminum plate is used to replace one of the glass window panes. This makes for freer radiation of heat. It is desirable to keep the room in which the chamber is placed quite cold, thus relieving the cooling coil of excessive work. A thermometer is suspended at one window to record variations in temperature. With warm outside atmospheres, the difficulties of cooling increase. We have not used it in hot weather, and believe it unpractical under these circumstances without additional cooling facilities.

The framework can be taken apart and rolled up into 3-foot lengths. With the windows removed, the tent is easily folded. The entire apparatus may thus be transported, and can be used in any private house supplied with electricity.

Oxygen is supplied in high pressure tanks, fitted with a reducing valve and gage calibrated to deliver oxygen in liters per minute. The tank contains 220 cubic feet under 2,000 pounds pressure, and lasts approximately one day of continuous oxygen therapy.

The analyses for oxygen and carbon dioxid have been greatly simplified by Binger. The details are described by him in an article[10] on the oxygen chamber now in use at the Rockefeller Institute. Both tests are easily learned and may be quickly performed. The escape from complicated gas analysis which these simple methods make possible is of great value in promoting the practical usage of this apparatus. The necessary equipment for the tests can be mounted at the head of the bed or kept on a table near by.

In order to render the apparatus transportable, a case has been constructed, shown in diagram and picture, which contains the soda-lime and calcium chlorid canisters, the cooling coil, motor and blower. The case is lined with felt to eliminate the noise of the motor.

The leakage of the tent is quite small. In fifteen hours, with the motor not running, the oxygen concentration fell from 50 to 40 per cent. With the motor running and a patient in the tent, 1 liter a minute sufficed to keep the oxygen concentration constant. The concentration may be raised from 29 to 40 per cent. by running in oxygen at the rate of 10 liters a minute for forty minutes. Opening a window for two minutes reduced the oxygen from 40 to 35 per cent. It was then brought back to 40 per cent. by running in oxygen at 10 liters for ten minutes.

The cost in oxygen is about $3 daily, in soda-lime and calcium chlorid, $5, making a combined cost of $8 a day. This is often less than the cost of oxygen when supplied by low pressure oxygen tanks in ordinary methods of oxygen treatment carried over the same period of time.

The procedure in beginning treatment may be briefly described: The ventilating outfit, compactly arranged in the case, is placed under the bed after the soda-lime and calcium chlorid canisters have been filled. The frame is set up by adjusting the telescope rods to a suitable height and length. The tent is then suspended to the hooks placed at 12-inch lengths along the horizontal bar. The window panes are not in place at this stage of the adjustment. One side of the tent is then lifted over the patient, and the process of rolling the flanged edges with the sheet is begun. The inlet and outlet tubes from the tent are now connected to the ventilating system by corrugated tubing, and the air circulation set in operation by starting the motor. The fan is also started and the window panes are placed in position. Oxygen is delivered at 10 liters a minute for forty minutes, which usually suffices to raise the concentration of oxygen to 40 per cent. The carbon dioxid percentage may be allowed to vary between 0.03 and 1 per cent., although in our experience it has never been above 0.6 per cent. and rarely above 0.3 per cent. The ventilation is ample to keep it at 0.3 per cent. The oxygen and carbon dioxid concentrations are tested every hour.

SUMMARY

The oxygen tent here described has the advantages of a small portable oxygen chamber, enclosing the entire patient in bed. Oxygen therapy may be accomplished with precise regulation of the oxygen concentration desired, and with adequate removal of carbon dioxid, moisture and heat. It is relatively simple in operation and may be transported to any hospital or private residence where electricity is available.

41 East Seventieth Street.

Special Article

REPORT OF COMMITTEE ON HEREDITARY BLINDNESS*

The main question now before this committee is what form of a law can be proposed that will prove the most practicable and efficient to lessen the continued propagation of hereditary blindness.

But for the sake of clearness, and especially for those who have not given particular attention to the subject, it is desirable to consider briefly the reason for suggesting any such legislation at all. Apparently only three methods for prevention have been suggested. The first of these, namely, operations for sterilization, although the most effective, and much safer than is generally supposed, would certainly arouse opposition at present. The next, separation of man and wife, is impracticable. Finally, legislation, although difficult to obtain, is nevertheless the only method that as yet gives hope for any prevention.

In advocating this, we have also found that legislators are slow to be moved by scientific or even by philanthropic considerations, and the quickest way of attracting their attention is by "touching the pocket nerve"; for, as they are elected to stand as guardians of the public purse, it is natural for them to demand, and incumbent on any one asking for still further legal restrictions to show, that at least one advantage would be economy to the taxpayer.

That would be even easier than now to prove, if only a little attention were paid to a recommendation made in the last report of this committee. That was, in substance, that superintendents of schools for the blind, students of genetics and of economics in our universities, physicians in general and particularly members of this section of the American Medical Association take the trouble to investigate and record the number and cost to the community, directly and indirectly, of families in which any form of blindness is hereditary. Naturally that is a slow, tedious work to which few are inclined and for which still fewer have time. Nevertheless, still more data are gradually accumulating.

Fortunately, or perhaps it should be said unfortunately, there is abundant evidence already to show that some effort should be made to prevent further waste of dollars, to say nothing of the cruel and needless wrecking of human hopes or lives. Sad examples of inherited defects are familiar to every physician—especially to those who treat diseases of the eye. The testimony in an abundant literature shows clearly that heredity is one of the most important problems with which the practitioner has to deal.

Various estimates thus far made by students of this question have placed the number of those blind in the United States from hereditary causes as from about 75,000 to 100,000, and their annual cost directly and indirectly at something more than $2,000,000. Moreover, when the records of institutions for the blind have occasionally been studied, they also show the number and cost of this group to be much larger than is ordinarily supposed. For example, the president of the board of trustees of the school for the blind at Batavia, N. Y., Dr. F. Park Lewis, called attention to one family which, several years ago, had then cost the state of New York more than $50,000. And the end is not yet—with that family or with the others like it.

* Read before the Section on Ophthalmology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

This brief retrospect will perhaps enable one to see at least the reasons for some legislation, referred to at the beginning of this report, and also why it is worth while to try to formulate a proposed law which will be the most practicable and efficient to lessen the continued propagation of hereditary blindness.

Those who are familiar with the earlier steps toward such legislation will remember that although it was evident that no law could be enacted, or perhaps should be enacted, which would interfere directly with marriage, on the other hand, when there was a strong probability that the children resulting from a certain union would become public charges, then it seemed only fair that the parties to such a marriage contract should give such a bond or bonds as would protect any citizen protesting, in due form, against the burden which he, as a taxpayer, would also probably be obliged to bear.

The obvious justice of thus securing a taxpayer against probable loss has not been questioned; and further study shows that in states in which each party to a marriage contract must declare under oath his or her freedom from syphilis or similar diseases, then it becomes comparatively easy to add to the existing law the provision desired.

The proposition will be generally accepted that any law which protects either of the parties to a marriage contract against the danger of syphilis is wise and beneficent. While that protection may be primarily against infection, it also means protection against the hereditary transmission of the disease, as it is so often seen in the eyes, as in other portions of the body. Any such recognition by law of the importance of hereditary defects is recognized by physicians and geneticists as of very great educational value for the public. If that principle of giving protection to the unborn against syphilis can now be more definitely expressed in an amendment to that law giving protection against hereditary blindness, it is not too much to hope that as similar data are carefully collected and formulated with cool scientific judgment, we may ultimately obtain similar protection from certain forms of inherited insanity and other defects, mental and physical. The ultimate benefits that might be possible in this way can only be imagined.

The proposed act is as follows:

AN ACT

TO AMEND THE DOMESTIC RELATION LAW, IN RELATION TO PREVENTION OF HEREDITARY BLINDNESS

The people of the state of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Chapter Nineteen of the laws of nineteen hundred and nine, entitled "An act relating to domestic relations, constituting chapter fourteen of the consolidated laws," is hereby amended by inserting therein, after section (25) twenty-five, a new section, to be section twenty-six, to read as follows:

26. Prevention of hereditary blindness. (1) Any town or city clerk empowered to issue marriage licenses shall, before issuing such licenses, require a written statement from the parties in the following words: "Neither myself nor, to the best of my knowledge and belief, any of my blood relatives within the second degree, have been affected with blindness: If so, I have been examined by and have submitted evidence in respect to such members of my family to a physician or expert in heredity, and his report shows that it is improbable that such blindness was transmissible by heredity." The clerk may examine witnesses or experts under oath to satisfy himself of the truth of the statement.

If one of the applicants shall refuse or fail to make such statement, or if the clerk is not satisfied of the truth of the statements, he shall refuse to grant the license unless the applicant file a bond to the state treasurer, in an amount to be fixed by the clerk. The bond shall be on the condition that if any child is born of the marriage and becomes a public charge on account of inherited blindness, then the cost of the support of the child up to the full amount of the bond shall be paid to the State of New York to be applied to the support of the child.

(2) The determination of the clerk may be reviewed on certiorari by the county court of the county in which the clerk has his office, or if there be no such county clerk in any county, then by the Supreme Court sitting in and for the district in which such county is situated. Review may be had at the instance of either applicant for license or any blood relative to the second degree of either applicant.

(3) No such certiorari shall be granted unless notice of the application therefor is made within thirty days of the action of the clerk in refusing to grant the license without bond.

(4) At the hearing, the judge or justice may appoint two physicians or other experts who are experienced in heredity or in the diseases of the eye to examine either applicant, or any relative affected by blindness, and make reports on such persons, and may adjourn the hearing for not more than ten days pending the making of such reports. The judge or justice may permit either party at the hearing to present evidence, oral or written, to examine the physicians making reports, and he shall determine on the evidence as presented, including the reports of the physicians and the papers certified by the clerk, whether there is sufficient ground for believing that the applicant is afflicted with hereditary blindness. If the judge or justice decides that the action of the clerk should be sustained, he shall fix the amount of the bond.

(5) Each physician appointed by the judge or justice shall receive not to exceed $20 a day for each day necessarily employed in making investigation and testifying at the hearing.

(6) A bond given under the provision of this section shall be in effect only until the woman reaches the age of 45 years. A bond no longer in effect may be canceled on the application of any person bound thereunder.

(7) This Act shall take effect immediately.

Although this act relates to the state of New York, it is probable that, with suitable changes, either it could be fitted into a corresponding statute elsewhere, or if no provision for protection against syphilis existed in a given state, then provision could be made for that at the same time. It is only necessary here to mention that in New York State the powers of the city or town clerk to investigate the facts alleged in an application for a marriage license are found in Section 14 of the Domestic Relations Law. Also that the bond is provided for by Section 306 of Chapter 705 of the Session Laws as amended by Chapter 437 of the Laws of 1924. The provision is now Section 306 of the State Charities Law.

In spite of the length of this report, it would be an omission not to give credit to at least some of the sources from which our information was obtained, and also briefly to express our appreciation of the encouragement or assistance given in the preparation of this report.

All students of the eye are especially indebted to the Francis Galton Laboratory of London, the last of its publications containing the details, with plates, of some 350-odd families afflicted with a special type of hereditary blindness.

A few years ago the Eugenics Record Office of Carnegie Institution of Washington issued as Bulletin 21 a list of publications on various hereditary eye defects, and the titles alone of the articles covered some forty pages.

From such sources a committee like this obtains its principal data.

Appreciation should be shown of information gained from those who have taken a wider view of eugenics as a whole. This includes the research work of such men as Davenport of the Carnegie Institution of Washington, Castle, East and McDougall of Harvard, and Morgan of Columbia, together with the work of Irving Fisher as president of the Eugenics Society of the United States of America, of Hon. Harry Olson, chief justice of the municipal court of Chicago, as organizer of the psychopathic laboratory as an adjunct to his court, and of the Eugenics Research Association, with headquarters at Cold Spring Harbor. Also Walter of Brown, Conklin of Princeton, Holmer of the University of California, Pearl of Johns Hopkins, Guyer of the University of Wisconsin, Goddard of the University of Ohio, Fairchild of the Department of Agriculture and Kellogg of the National Research Council, together with such writers as Preuse, Johnson, Wiggam, and numerous other students of this rapidly growing science of eugenics.

Finally, this committee would recommend that:

1. The thanks of the section be extended to all those who have assisted the committee in the preparation of this report.

2. Ophthalmologists and physicians, especially those connected with institutions for the blind, be urged again to make use of their opportunities to obtain, publish or send to this committee all possible data as to the number and cost of those who are blind from hereditary causes.

3. Members of the section be urged to interest themselves in obtaining legislation like the model here presented, or in some other form, with a view to lessening the continued propagation of hereditary blindness.

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THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JULY 18, 1925

LOWERING THE BLOOD PRESSURE WITH LIVER EXTRACT

In January, 1923, Dr. W. J. MacDonald,[1] a clinician of St. Catherines, Ontario, conceived the view that the liver secretes a substance that plays an important part in the regulation of blood uric acid, and that if such a substance could be recovered, it might be of service in the control of cancer. This conception was based on the fact, to which he himself refers, that Killian and Kast had shown a definite increase of uric acid in the blood of 80 per cent. of cases of internal cancer, and that Mann and Magath had found the uric acid in the blood mounting steadily until death in dogs from which the liver had been removed. During 1924, Dr. MacDonald prepared many extracts of liver and tested their toxicity on dogs and cats. Finally, in December, he noticed that the blood pressure fell steadily in two cases of carcinoma in which the extract was being used to reduce the uric acid in the blood. In the meantime Fishberg had shown that the uric acid is high in the blood of patients with essential arterial hypertension. Dr. MacDonald, therefore, finding that previous investigators, as far back as 1915, had used extracts of liver and of other internal gland tissues to reduce the blood pressure in experimental animals, determined to try the extract in a clinical case of high blood pressure.

The results obtained in the first case were so encouraging that the observations were extended to other patients. In all, thirty-three cases were studied, the age of the patients ranging from 45 to 67 years, with an average of 61 years. In these cases hypertension had persisted for varying periods, averaging six years; the average range of blood pressure before injection was 204 mm. systolic and 114 mm. diastolic. Physiologic sodium chlorid solution of extract of the liver was injected intravenously in different dosages. Twenty-five patients experienced no disagreeable symptoms, most of them reporting apparent relief. In eight cases, however, there were reactions of varying degrees, some of which closely resembled protein shock. There was an average fall in the systolic blood pressure of 62 mm., so that the average of the systolic pressure after injection in the thirty-three cases studied was 142 mm. There was an average fall in the diastolic blood pressure of 28 mm., so that the average of the diastolic pressure after injection was 86 mm.

Attempts were made to recover from the extract what appeared to be the active principle, and two elements were isolated that seemed to possess the powers of the whole extract. The observations of Dr. MacDonald were of such interest that plans have been made to continue the studies in the Department of Physiology and Connaught Laboratory of the University of Toronto, with the assistance of Dr. C. H. Best, known particularly for his work on insulin.

Coincidentally with the work of MacDonald, Dr. Ralph H. Major,[2] of the department of internal medicine in the University of Kansas School of Medicine undertook a series of experiments along similar lines, beginning with the assumption that some protein body had a pressor effect. He and his colleagues investigated some of the better known metabolites. It was found that creatin and creatinin had no effects on the blood pressure, but it was also found that methyl guanidin, a product of protein metabolism, had power to raise the blood pressure promptly and to maintain the increase for from four to five hours. Attempts were then made to determine the effects of certain substances on the hypertension produced by guanidin. Veratrum viride and amyl nitrite produced transient effects; but calcium chlorid produced a permanent fall in blood pressure, accompanied by marked cardiac irregularity. This irregularity was overcome by the addition of potassium chlorid to the calcium chlorid. If the combination of potassium and calcium chlorids is introduced before the administration of guanidin compounds, no rise in blood pressure occurs. A fall in the blood pressure was also secured by the injection of normal hydrochloric acid and ammonium chlorid. The parathyroid extracts of Hanson and Collip produced falls in the high blood pressure caused by the injection of the guanidin compounds.

A further series of experiments included the injection of extracts of liver, spleen, kidneys, muscles, ovaries and testes. Major found that liver extract has a profound effect on the high blood pressure due to guanidin, reducing it to normal in a few minutes and keeping it at a low level. The injection of a mixture of liver extract and of methyl guanidin is not followed by a rise in blood pressure. A number of patients suffering with arterial hypertension have been treated with the liver extracts with results that were striking,

1. MacDonald, W. J.: Extractives of Liver Possessing Blood Pressure Reducing Properties, Proc. Soc. Exper. Biol. & Med. **22**: 483, 1925; Canadian M. A. J. **15**: 697 (July) 1925.

2. Major, R. H.: Observations on the Cause and Treatment of Arterial Hypertension, J. Kansas M. Soc. **25**: 177 (June) 1925.

although Major emphasizes that caution must be observed in this work.

It has been known for some time, as a result of the work of Dale and his colleagues in Great Britain, that histamin and various derivatives possess the power of causing marked falls in the blood pressure; it seems likely, moreover, that histamin or like substances are contained in appreciable quantities in the liver extracts that are used. Nevertheless, the investigators are convinced from subsequent work that protein shock plays little if any part in the phenomena, and are inclined to believe that the effect is not an ordinary protein effect due to cholin, histamin or peptone.

As may be surmised, much work remains to be done before a complete comprehension can be had of the value of this method, or its possibilities in the control of essential hypertension. Obviously, it is desirable to determine definitely the actual principle concerned and the mechanism by which the results are secured. At the same time, it is clear that the liver extracts do have a definite effect in lowering the blood pressure. Their clinical value will depend not only on the securing of a stable and uniform extract, but also on the permanence of the fall in pressure and on its relation to other pathologic changes existing in the body. It is well that the experimental work is to be conducted under scientific and controlled conditions.

MUSCLE WORK AND PROTEIN METABOLISM

Muscle is unusually rich in protein; when foods rich in albuminous nutrients are under consideration, our thoughts are likely to turn first of all to meats—the edible forms of muscle tissue. During life, this substance is the seat of extensive metabolism. The contractile processes leading to external work and to heat production are of fundamental importance, and they go on in or about a protoplasmic structure characterized by its relative abundance of protein. Little wonder, then, that Liebig reached the conviction that during muscular activity the organized structures of the contractile tissue are disrupted so that the destruction of its protein will yield the energy for work. A sequence to this reasoning was the further idea that nutrient protein functions to replace the protein structures disintegrating during contraction.

This view has long been relegated to the category of abandoned hypotheses in physiology. The writers of today, following the lead of Carl Voit, give an entirely different interpretation of the energy metabolism of muscle. Thus, Mathews [1] states, in a pronouncement characteristic of what one may read in any current textbook of physiology: "The energy metabolism of muscle is, as it were, superimposed upon the formative metabolism. This metabolism is peculiar in that it does not directly involve any increase in protein catabolism. Muscular work does not increase the nitrogen output of the body or of muscle. This metabolism involves primarily the carbohydrates." This dictum has become emphasized even more of late through the studies of Embden, Hill, Meyerhof and others on the energetics of muscle—investigations in which the dominant rôle of carbohydrate in the contractile functions is stressed from many directions.[2]

Nevertheless, Cathcart [3] of Glasgow University has not hesitated to question the supposed settled conclusion of present-day physiologists that muscular work does not increase protein metabolism. He visualizes the active tissue as built up of a complex substance, protoplasm, which certainly plays the vital part in the various metabolic processes. These consist not merely of the production of work and heat, essentially catabolic phenomena, but also of the equally important anabolic phase associated with tissue restitution. Even if the carbohydrate supply is actually stored in the various cells in discrete form, Cathcart reasons, it must come into more intimate contact with the active metabolic tissue before it is utilized. There is no indubitable evidence as to whether or not it ever becomes an integral part of the active cell tissue. The reading of modern work, he adds, would suggest implicitly perhaps rather than explicitly that the material yielding the energy requisite for muscle contraction is a fuel which is, so to speak, stoked on to the cellular furnace; that, in other words, a superimposed temporary metabolism is possible.

However, there are seemingly cogent indications that changes affecting the nitrogenous components can and do take place in muscle as a result of activity. From a quantitative standpoint, they are overshadowed by the transformations involving the non-nitrogenous components. More than one investigator has observed that the nitrogen output in the urine is increased after work but has minimized the importance of such findings. Recent experiments of Cathcart seem to bring accurate supporting data. They suggest that in the normal course of contraction events there is "a regular throwing out of action of part of the protein element and a subsequent catabolism of this immobilized material." To the question as to why, if there is an active metabolism of nitrogenous compounds during muscular contraction, the excretion of nitrogenous waste is ordinarily increased so little thereby, Cathcart would reply that either the resulting fragments may be resynthesized into the protoplasmic structure, or the loss may be replaced out of ingested protein. In support of the latter suggestion is the well known fact that work tends to lead to hypertrophy of the muscles involved; that is, with associated retention of nitrogenous compounds.

1. Mathews, A. P.: Textbook of Physiological Chemistry, New York, William Wood & Co., 1920.

2. When a Muscle Contracts, editorial, J. A. M. A. 84:442 (Feb. 7) 1925.

3. Cathcart, E. P.: The Influence of Muscle Work on Protein Metabolism, Physiol. Rev. 5: 225 (April) 1925.

It will not be easy to uproot the current fixed beliefs about the metabolism of muscle during work; nor do the newer concepts negate the conclusion that the most readily available combustible fuels of muscle are non-nitrogenous in nature. But Cathcart will not accept the conception of a nitrogenous structure in which protein must often assume the rôle of an acid buffer, in which unique compounds like creatin, creatinin and purin derivatives are subject to as yet little understood changes, and through which a continually altering blood supply is driven at varying velocities—all leaving the nitrogen factors inert and entirely unchanged. Hence he champions the view that muscle work leads to a definite though perhaps limited increase in the output of nitrogen, i. e., to increased catabolism of protein; and that the same muscle activity leads to the laying down of protein, i. e., to the stimulation of the anabolic processes in the broadest sense of the term. In other words, Cathcart concludes, the existent evidence points to a definitely enhanced metabolism of protein as the result of muscle activity.

THE CULTIVATION OF ENDAMEBA HISTOLYTICA

Scarcely more than half a century has elapsed since Lewis, in 1870, described an intestinal ameba, probably *Endameba coli,* in man. The organism *Endameba histolytica,* which has come to be associated with amebic dysentery, was first seen by Loesch in 1873 abroad, and in America in 1890 by Osler, who confirmed the fact that it occurred in abscesses of the liver. This pioneer work became responsible for the investigations of Councilman and Lafleur, in 1891, on the pathology of amebic dysentery and amebic abscess of the liver. Despite the well established etiologic relationships, these aspects of human protozoology received comparatively scant consideration from physicians until the World War raised a series of hitherto little considered problems of human disease. Entozoic amebas of man have been regarded as related essentially to the tropical or subtropical countries with respect to their distribution. Through the war-time studies, however, one fact of paramount importance has developed. As Hegner and Taliaferro [1] have pointed out, most infections with *Endameba histolytica,* the parasite of amebic dysentery, can no longer be considered tropical but are world wide in their distribution. In fact, these protozoologists add, we can sum up the geographic distribution of all the entozoic amebas of man by saying that they all occur, in different percentages in each species, wherever man occurs.

The detailed consideration of maladies that are attributable to microbiotic agencies has long since demonstrated the undeniable importance of isolating the living etiologic organism and growing it in "pure culture." The history of modern bacteriology abounds in illustrations of what this has meant for progress in the attack on the disease-producing forms. Recognition of their habitats and development and the products of their metabolism, the ability to reproduce diseases by inoculation with the isolated agents, and familiarity with their life history have brought bacterial toxins and their antitoxins into prominence and recognized usefulness. It has been remarked, indeed, that the introduction of methods of artificial cultivation marks the beginning of the science of microbiology.

Protozoology has lagged behind bacteriology in respect to the artificial cultivation of the forms with which it deals. The successful cultivation of amebas has become an accomplishment of the present decade. The claims of success in the case of the parasite of amebic dysentery have repeatedly been denied or disproved until most investigators seemed to despair of overcoming the difficulties. The feat of cultivation seems, however, to have been accomplished at last by Boeck and Drbohlav [2] of the Harvard Medical School. They report that in culture *Endameba histolytica* feeds on bacteria and red blood cells whenever the latter are furnished in the medium. The ingestion of bacteria by *Endameba histolytica,* when deprived of red blood corpuscles or cell fragments and juices, shows, they state, that some of our previous views regarding the nutrition of *Endameba histolytica* have been erroneous and that under certain conditions this ameba, like *Endameba coli* and others, may eat bacterial organisms. The pathogenicity of the amebas of the subcultures was apparently established; at any rate, kittens could be infected, and the protozoa recovered from the animals. Typical dysentery, with ulcerative colitis and occasionally hepatic abscess, also, were produced through the inoculations.

Another feature of possible great significance in relation to amebiasis has been reported from the same laboratory by Chiang.[3] It concerns the infection of rats with *Endameba histolytica.* The pathogenicity of the amebas found in such experimentally infected animals has been demonstrated by the inoculation of kittens and the production of dysentery and lesions containing amebas. The infection of rats with *Endameba histolytica* of human origin is readily transmitted from rat to rat by association in the same cage, so that the rat is clearly incriminated as a possible carrier of the causal agent of amebic dysentery. This is what Lynch [4] asserted a decade ago. The purely conjectural character of such conclusions must still be emphasized.

1. Hegner, R. W., and Taliaferro, W. H.: Human Protozoology, New York, the Macmillan Company, 1924.

2. Boeck, W. C., and Drbohlav, J.: The Cultivation of Endameba Histolytica, Proc. Nat. Acad. Sc. **11**: 235 (May 15) 1925.

3. Chiang, S. F.: The Rat as a Possible Carrier of the Dysentery Amoeba, Proc. Nat. Acad. Sc. **11**: 239 (May 15) 1925.

4. Lynch, K. M.: The Rat a Carrier of a Dysenteric Ameba, J. A. M. A. **65**: 2232 (Dec. 25) 1915.

THE ETIOLOGY OF ACUTE APPENDICITIS

Acute appendicitis is a disease sufficiently frequent to warrant an extremely clear understanding of its etiology, but it would be rash to assert that this has been attained. As has happened in relation to other disorders, the progress of scientific study has served thus far mostly to dispel some of the extremes of belief, to correct exaggerated claims, and to preserve an open mind on the part of enthusiasts for a special hypothesis. The upshot has been to admit a variety of predisposing causes into the story of the etiology of appendicitis. Mechanical defects attributable to tissue obstructions, concretions and foreign materials no longer are the center of attention in this connection. The rôle of some specific micro-organism as the outstanding local causal agent of the onset has not been well sustained. Lately the statement that appendicitis may be of hematogenous origin, secondary to distant foci of infection, has been advanced with considerable enthusiasm and some forcible experimental evidence. The importance of realizing the manifold possibilities is illustrated in a well planned investigation at the Boston City Hospital by Warren,[1] who has made simultaneous bacteriologic and histologic examinations of a large number of appendixes removed under a variety of different clinical conditions. They show anew that acute appendicitis is not a specific disease due to one type of organism, a streptococcus as sometimes maintained. Like acute tonsillitis, acute endocarditis and similar infectious lesions, it may be caused by a variety of organisms. The inflammatory reaction does not vary with the organism found in the lesion, although it is perhaps more hemorrhagic in those cases in which *Streptococcus hemolyticus* is recovered. Warren believes that the evidence is against a hematogenous origin of acute appendicitis. According to him, the earliest stage of the lesion found in these acutely inflamed appendixes is necrosis and slight ulceration of the mucosa, not in those portions nearest the center of the lumen, as would be expected if a bacterial poison present in the lumen were causing the change, but down in the folds, somewhat suggesting the early inflammatory changes in the crypts of the tonsil. All the organisms found in the lesions, with the exception of a pneumococcus, are fairly common in the intestinal flora. There is little need, therefore, to assume a hematogenous origin of the infection. The character and location of the early lesions are decidedly in favor of an invasion from the lumen. The peristaltic action of the muscularis of the appendix is probably of great importance in keeping the contents of the lumen in motion, and any interference with this action, whether functional or structural, due perhaps to scarring from previous attacks, will favor the accumulation of bacteria in large numbers and ultimately permit sufficient concentration of bacterial products to cause necrosis of adjacent epithelium. Obstruction of the lumen, whether by kinking, partial obliteration by scarring, or the presence of fecaliths, would have the same effect. The occasional appendixes that show no organisms either on culture or on histologic examination, and yet are acutely inflamed, can probably be explained by the destruction of the invading organisms by the defense mechanism of the body, but only after they have done serious damage.

1. Warren, S.: The Etiology of Acute Appendicitis, Am. J. Path. 1:241 (March) 1925.

Current Comment

THE CHALLENGE OF THE PATIENT WITH CHRONIC DISEASE

In the last quarter century, the span of life has been lengthened and certain infectious diseases have been eliminated from vast areas. The greatest obstacle now to further progress comprises the group of afflictions generally referred to as chronic disease. Seventy years ago such conditions caused one fifteenth of the total number of all deaths; today they are responsible for one half of all deaths. Opportunity to observe and study the causes of chronic ailments and to render a much needed service is available in the homes for the incurable and almshouses throughout the country. In a recent study of the leading institutions of this nature, Boas [1] found that the scientific study of disease in such homes is almost ignored. Inmates are looked on in general as beyond rehabilitation. The 1910 census showed that nearly two thirds of the 84,000 paupers in almshouses suffered from physical or mental defects and that the death rate among them was 207.7 per thousand enumerated. This condition apparently did not improve in the next ten years. In New York, in 1921, 67 per cent. of nearly 9,000 inmates of almshouses were sick or infirm. The few large institutions that have attempted to rehabilitate their inmates have been handicapped by inadequate appropriations. Some inmates need only custodial care; some need only nursing care; others require the facilities of a well organized hospital. The individual patient changes from one class to another on account of acute attacks of disease, exacerbations of chronic ailments, or accidents. Obviously, therefore, it is poor management to maintain an institution on the basis that every inmate needs at all times only one kind of care. Boas asserts that buildings designed at minimal expense for those who need a home should be provided, but the main building should be reserved for those who need hospital care and for whom there is hope for rehabilitation. County almshouses cannot be organized in this manner. The counties should pay a proportionate share in the maintenance by the state of large central institutions, which would give better service. The small homes for the incurable and the small almshouse have no place for an independent existence without hospital facilities.

1. Boas, E. P.: The Challenge of the Chronic Patient, Survey, Feb. 15, 1924.

GENESIS OF THE BLOOD PLATELETS

Ever since the view was advanced that the blood platelets play an important part in connection with the coagulation of the blood, the problem of the genesis of these cells has held a prominence almost equal to that of their function. Among the hypotheses advanced to account for the histogenesis of the plates are the suggestions that they originate from the nuclei of polymorphonuclear leukocytes; that they are the extruded remnants of the nuclei of young erythrocytes, and that they are detached fragments of the cytoplasm of the giant cells of the bone marrow. For none of these has the evidence been compelling; yet it is a matter of considerable importance in relation to certain diseases involving the circulatory system to have the origin and fate of the platelets settled. It is now generally conceded that under normal conditions the origin of the red cells is restricted to the bone marrow.[1] According to experiments at the Lister Institute in London by Bedson and Johnston,[2] the bone marrow is the parent tissue also of the platelets of the blood in normal extra-uterine life. The method of study was ingenious. Antiserums were prepared for various organs assumed to be concerned with platelet genesis. Only in the case of the use of antimarrow serum were these blood cells removed from the circulation. There was no evidence, however, that phagocytosis of red blood cells by megakaryocytes or other phagocytic cells has any connection with platelet production. The association of the platelets with the bone marrow finds further support in the clinical evidence that in the aplastic anemias, in which there is a general failure of the marrow, a great diminution in the number of platelets is an early and prominent change in the blood picture, while in myelogenous leukemia there is constantly an increase in the count.

THE BRITISH CANCER RESEARCH

The newspaper sensation of the current week, aside from the attempt to prevent by legal trial in Dayton, Tenn., the extension of knowledge regarding evolution, has been the announcement that certain British investigators have discovered an ultramicroscopic organism in association with experimental tumors in animals. During the last twenty years, numerous investigators have reported the finding of various bacterial organisms, both those visible under the microscope and the so-called ultramicroscopic variety in association with human cancer. None of the organisms thus far found that have been alleged to be the specific cause of the disease have been confirmed as the actual cause. Indeed, the majority of investigators who are devoting themselves particularly to studies of the cause of cancer believe that the disease is not caused primarily by a bacterial organism, but that it is the result of other factors, chemical or physical or related to some specific substance within the human cell, not yet determined. At the same time, it seems reasonable to believe that bacterial organisms of various kinds may find cancer tissue a suitable place for their growth within the human body, and may thus modify in various ways the growth and development of the cancer. Some years ago, Peyton Rous of the Rockefeller Institute described an ultramicroscopic organism or filtrable virus associated with certain experimental tumors in chickens. Recent studies indicate that this organism may be of the type of the much discussed "bacteriophage." Evidently the British investigators have pursued somewhat farther the work of Peyton Rous with this form of tumor, and their report is to some extent a confirmation of his investigations. It will be a considerable step to find the relationship of such an organism to cancer as it occurs in man and obviously the next procedure will be to determine whether any such relationship exists. Obviously, also, the present series of experiments, while of great interest from a research point of view, has no immediate bearing on either the prevention or the cure of human cancer.

1. Sabin, F. R.: On the Origin of the Cells of the Blood, Physiol. Rev. **2**: 38 (Jan.) 1922.
2. Bedson, S. P., and Johnston, Mary E.: Further Observations on Platelet Genesis, J. Path. & Bacteriol. **28**: 101 (Jan.) 1925.

Association News

TRANSACTIONS OF THE SECTION ON MISCELLANEOUS TOPICS

Publication of a Volume Containing the Papers Read in the Sessions on Radiology, with Discussions

It has been decided to publish a volume of Transactions of the Section on Miscellaneous Topics in order that the papers and discussions on radiology presented at the Atlantic City Session may be available to all who are interested in that subject. The volume will be sold at $1.50 per copy. Orders should be sent to the American Medical Association, 535 North Dearborn Street, Chicago, specifying "Transactions of the Section on Miscellaneous Topics—Radiology—1925."

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Personal.—Dr. Cecil Greer, Chicago, has been appointed resident physician and given charge of the medical department of the Arkansas Boys' Industrial School, Pine Bluff. ——Dr. John C. Swindle, Walnut Ridge, has been reappointed a member of the state medical examining board for a term of five years.——Dr. James R. Wayne, Jr., Little Rock, has been appointed adjutant general on the governor's staff.

CALIFORNIA

Fifteen Hundred Chiropractors Licensed.—James Compton, secretary, California State Board of Chiropractic Examiners, recently announced that in the last few months the board had licensed 1,542 chiropractors.

Hospital News.—The first unit of the new Burbank Hospital, Burbank, was recently opened, and plans for the second unit are being prepared.——Chinatown in San Francisco is planning the formal opening of a new hospital which will accommodate fifty-five patients. Some members of the medical and nursing staffs will be Chinese.——The Lutheran Hospital, Los Angeles, is constructing a nine story building which will cost $1,500,000.——The Jared Sidney Torrance Memorial Hospital, Torrance, was recently opened. Its capacity is forty beds and the cost was $115,000.——The Siskiyou County Hospital, Yreka, is planning a new home, which will cost $150,000.

"Colonel Bindihan Ghadiali, D.C., M.D., Ph.D., LL.D."—The department of justice recently arrested in Seattle Colonel Ghadiali, otherwise known in San Francisco as "Dinshah," on a charge of violating the Mann Act, it is reported. According to a copy of the articles of incorporation of the "Spectro-Chrome Institute," Ghadiali is the originator, developer and applicator of "spectro-chrome therapy" for "restoration of the human radioactive and radioeminative equilibrium by attuned color waves without the use of drugs, manipulation or surgery." Ghadiali, whose former address apparently was 2401 North Broad Street, Philadelphia, was one of the incorporators of the "institute."

COLORADO

Personal.—Dr. Robert T. Frank, Denver, has been appointed attending gynecologist to Mount Sinai Hospital, New York.——Dr. Frederick R. Baker, Palmer Lake, has taken up his duties as county physician for El Paso County.——H. W. Wolcott, assistant superintendent, Wesley Memorial Hospital, Chicago, has been appointed superintendent of St. Luke's Hospital, Denver, effective, July 15.——Dr. Edward Jackson, Denver, was recently awarded the Leslie Dana medal in St. Louis. The medalist is selected each year by the National Committee for the Prevention of Blindness, in cooperation with the Missouri Commission for the Blind.——Dr. Clough T. Burnett has been elected president of the Denver Tuberculosis Society.——The faculty of the Medical School of the University of Colorado gave a dinner, June 30, in honor of Dr. Charles N. Meader, on the occasion of his retirement as dean of the medical school.

DISTRICT OF COLUMBIA

Sanitary Survey of Potomac River.—A survey of the waters of the Potomac River in the vicinity of Washington to determine what action, if any, may be taken to render the river safe for bathing has been started by the U. S. Public Health Service in cooperation with the District health officer, Dr. William C. Fowler. The engineering problems relating to the disposal of Washington sewage into the Potomac 7 miles below Washington, the character of the small streams that flow into the Potomac and what pollution, if any, occurs on such streams, and the fact that the Potomac at Washington is affected by ebb and flow of tide water are among the subjects to be included in the survey. The report will be available to Congress when it again considers the question of adequate outdoor public bathing facilities for the District of Columbia. The Potomac River at present is polluted and dangerous to health. If it is possible to reduce the river pollution through better disposal of sewage so that the river may be safe for public bathing, the problem of outdoor bathing will be solved for Washington. If it is found that the river cannot be used, then Congress will have to turn to the establishment of artificial pools filled with filtered water. The purpose of the present survey is to place the fullest information in the hands of Congress when it undertakes to establish bathing beaches for the District of Columbia.

ILLINOIS

Physician Fined.—It is reported that Dr. William Bridge and C. F. Schultz, druggist, both of Elgin, were fined $1,500 each, June 30, in federal court, Chicago, on charges of violating the Harrison Narcotic Law.

Tax for Community Nurses.—A new law in Illinois provides that cities of from 5,000 to 100,000 people may levy a three-tenths mill tax to pay the salaries of community nurses who are appointive by the mayor on recommendation of the local board of health. At present many of the public health nurses of the state depend on private sources involving, says the state department of health, fund raising campaigns and public subscriptions for financial support.

Better Babies Conference.—Applications for entering babies in the tenth annual State Fair Better Babies Conference, to be held in Springfield, September 19-26, will be accepted up to September 12, unless the capacity is reached before that date. More than 1,300 babies, representing fifty counties in the state, were examined last year, and a staff of about 100 physicians, psychiatrists, nurses and others make up the organization that gives the examinations. Fifty-three awards, in the form of savings bank accounts which vary from $2 to $100 each, and other prizes, are offered to children found to be most nearly perfect. Children between 6 months and 5 years of age are eligible to compete, as well as families of six children under 16 years of age, and children up to 6 years of age examined last year may compete for improvement awards.

Chicago

Health Commissioner Requests Funds.—Dr. Herman N. Bundesen, commissioner of health of Chicago, renewed his request to the council for $25,000 to combat the threatened spread of smallpox. Dr. Bundesen said, it is reported, that the $4,000 granted, June 4, by the city council has been expended in vaccinating those who have been exposed to smallpox, and that the present smallpox situation in Chicago is more serious than at any time since 1905.

Personal.—Dr. George M. Curtis has been appointed associate professor of surgery at the University of Chicago and associate professor of experimental surgery under the Douglas Smith Foundation for Research of the University of Chicago. Dr. Curtis returns to the University of Bern, where he has an appointment as assistant in the surgical clinic under Dr. F. DeQuervain at the Inselspital, pending the opening of the new University of Chicago Hospital.

Committee Objects to Germ Ordinance.—An ordinance has been completed in the office of the corporation counsel of Chicago for submission to the city council, which would regulate the possession, selling, giving away or otherwise distributing pathogenic bacteria. The following resolution concerning the ordinance has been adopted, it is reported, by a special advisory committee of the Chicago Department of Health, comprising Drs. Ludvig Hektoen, Frank J. Norton, Alexander A. Day, James P. Simonds, David J. Davis, Lloyd L. Arnold, Josiah J. Moore, Charles P. Caldwell, Jacob C. Geiger and Frederick O. Tonney:

> It is the sense of this committee that the control of the distribution of pathogenic cultures among laboratories, universities and research institutions by ordinance is impractical, and that the attempt so to control them will be a serious obstacle to teaching and will retard scientific progress. Such ordinances are futile and tend to break down respect for law.

IOWA

Occupational Therapy Association.—At a state-wide meeting, July 1, at Iowa City, the Iowa Occupational Therapy Association was formed and the following officers elected: Bird T. Baldwin, Ph.D., research professor of educational psychology, State University of Iowa, president, and Dr. Julia F. Hill, Des Moines, secretary-treasurer. There were twenty-four delegates at the meeting from hospitals in the state.

KANSAS

Hospital News.—Dr. David E. Clopper, Kansas City, is constructing a $50,000 private hospital at Thirty-Seventh Street and Strong Avenue, which will be completed in August.

Personal.—Dr. John F. Hassig, Kansas City, has been reelected president of the state board of medical registration and examination. Dr. Albert S. Ross, Sabetha, was elected secretary.

State Board Refuses License.—According to the Mount Vernon, Mo., *Record*, the Kansas State Board of Medical Registration recently refused to restore a license to practice medicine to Dr. William A. Nixon, Great Bend. Dr. Nixon's license, it is said, had been revoked following his sentence to the penitentiary.

KENTUCKY

Personal.—Dr. William M. Elliott, Lancaster, has been appointed superintendent of the Central States Hospital, Lakeland, to succeed Dr. Walter A. Jillson, resigned.——Dr. S. C. Smith has been appointed chief surgeon at the Methodist Hospital, Pikeville, to succeed Dr. William C. Gardner, resigned.——Dr. Floyd P. Allen, formerly of Ann Arbor, Mich., assumed the duties of health officer of Paducah, July 1.

LOUISIANA

Personal.—Dr. Alexander J. Azar has resigned from the teaching staff of Tulane University to engage in private practice.

Hospital News.—A contract has been awarded for the construction of a nurses' home in connection with the Baptist Hospital, New Orleans, for about $92,000. Work will begin at once. The building will accommodate, when completed, 120 nurses.

Building for Epileptics.—Mrs. William H. Dielman, New Orleans, made a gift of a building for epileptic patients, to be erected on land owned by the Home for Incurables, at a

meeting of the board, July 7. The structure will cost more than $30,000 and be a memorial to Mrs. Dielman's daughter, who died four years ago.

MAINE

Personal.—Dr. William Holt has been appointed city physician of Portland to succeed Dr. E. H. Drake, resigned.—— Dr. Ralph F. Goodhue, Portland, has been appointed by the governor medical examiner of Cumberland County.

Superintendents to Report Venereal Disease.—The eighty-second legislature passed an amendment which requires that superintendents of state, county and municipal, charitable or correctional institutions report to the state department of health, not later than fourteen days before the estimated date or release, any inmate who is effected with a venereal disease in an infectious form.

MARYLAND

University News.—William W. Cort, Ph.D., associate professor of helminthology, department of medical zoology, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, has been promoted to a professorship of helminthology.

Fellowships in Plastic Surgery.—Joseph S. Ames, LL.D., acting president of Johns Hopkins University, Baltimore, has announced the establishment at Johns Hopkins Medical School of two fellowships in plastic surgery, each of three years' tenure, by the General Educational Board of New York. The fellowships are the first of their kind established in this country, and are open to doctors of medicine who have shown ability as students. They afford an opportunity for research and laboratory work and the incumbents will be selected so that continuity will be provided, one student being always engaged in a particular investigation. Dr. Ames also announced a fund of $50,000 established by James Speyer to facilitate visits to Johns Hopkins University by distinguished scientists connected with departments of the natural sciences of the universities of Germany.

MASSACHUSETTS

Dr. Packard Retires.—Dr. Horace Packard, Boston, for many years professor of surgery at the Boston University School of Medicine, recently announced his intention to retire from active practice, and a dinner in his honor was tendered by his associates at the Hotel Somerset. Dr. Packard is in his seventieth year.

Dr. Worcester Appointed Professor of Hygiene.—The announcement has been made at Harvard University, Cambridge, that Dr. Alfred Worcester has been appointed Henry K. Oliver professor of hygiene. Dr. Worcester will serve also as head of the department of hygiene and physical education, of which Dr. Derric C. Parmenter has been acting head this year, following the resignation of Dr. Roger I. Lee, Boston, in 1924.

Personal.—Dr. Ransom A. Greene, until recently superintendent of the Taunton State Hospital, has been appointed superintendent of the Walter E. Fernald State School, formerly the Massachusetts School for the Feeble-Minded, at Waverly.——Dr. Winfred Overholser, Boston, has been appointed director of the division for the examination of prisoners of the State Department of Mental Diseases, to succeed Dr. Ralph M. Chambers, who becomes superintendent of the Taunton State Hospital.——Dr. James L. Gamble has been promoted to associate professor of pediatrics at the Harvard University Medical School, Boston.

MICHIGAN

Smallpox Epidemic Controlled.—The county physician reports that the smallpox epidemic in the vicinity of Recreation Park is under control. There has been a total of twenty-eight cases and no deaths.

Personal.—Dr. Herman C. Emmert, Detroit, has been appointed professor of bacteriology and pharmaceutic botany at the Detroit College of Pharmacy and Chemistry.——Dr. Charles W. Edmunds of the University of Michigan Medical School, Ann Arbor, has been invited by the health committee of the League of Nations to attend a conference in Geneva on international standards for a number of drugs and medicines, and will sail this month.——Dr. Dean Lewis, Chicago, conducted a surgical clinic, June 30, at the New Butterworth Hospital, Grand Rapids; Dr. Francis M. Pottenger, Monrovia, Calif., conducted a medical clinic in Grand Rapids, June 9.——Dr. Earl B. McKinley, Sault Ste. Marie, a fellow of the National Research Council in Medicine with Professor Bordet at the University of Brussels, has accepted the assistant professorship of bacteriology at Columbia University College of Physicians and Surgeons, New York City.

MISSISSIPPI

Health Units Combined.—At a meeting of the board of supervisors, July 6, at Clarksdale, it was voted to combine the county health office and the Clarksdale health unit, thus giving the county health officer control over the health situation in Coahoma County. Dr. Robert R. Kirkpatrick will be the county health officer.

Personal.—Dr. Milton W. Robertson, Rienzi, has been appointed health officer of Alcorn County to succeed Dr. James S. Voyles, who has been the county health officer for eight years and was not an applicant for reappointment.—— Dr. William W. Reynolds has been appointed county health officer of Lauderdale County, to succeed Dr. Inman W. Cooper, resigned.

NEBRASKA

Hospital News.—A $250,000 addition to St. Catherine's Hospital, Omaha, having a capacity of 165 beds, was recently opened.——A contract has been let for the second and third units of the Lincoln Methodist Hospital, Lincoln. The buildings will be one story structures and will cost $100,000.

Dr. Bridges Heads Department of Medicine.—The dean, Dr. John Jay Keegan, of the University of Nebraska College of Medicine, Omaha, announced, July 2, the retirement of Dr. LeRoy Crummer, Omaha, as active head of the department of medicine and the appointment of Dr. Edson L. Bridges to that position. Dr. Crummer has for many years been connected with the medical school and will continue on the faculty as an emeritus professor. Dr. Bridges also has been a teacher in the school for a number of years. Dr. Irving S. Cutter, former dean, left Omaha, July 2, to enter his new field of work at Northwestern University Medical School, Chicago.

NEW HAMPSHIRE

Society News.—The New England Health Institute, an annual school for a week's instruction in public health, will meet next year in Concord in May. Dr. Charles G. Duncan, secretary of the state board of health, has been selected as director of the institute.

Constable Practices Medicine.—Bartley Carleton, a constable at Center Ossipee, was recently arraigned in superior court on an indictment charging him with practicing medicine without a license, to which he pleaded guilty, it is reported, and was fined $25 and costs.

NEW JERSEY

Medical Examiner Reappointed.—Governor Silzer, July 10, reappointed Dr. Charles A. Groves, East Orange, to the state board of medical examiners.

Society News.—Dr. Samuel B. English, superintendent of the New Jersey State Sanatorium, Glen Gardener, recently addressed the Somerset County Medical Society, at Somerville, on the diagnosis of tuberculosis.

Increase in Infantile Paralysis.—The prevalence of infantile paralysis in lower Jersey City during the last few weeks is regarded as serious by health authorities there. Seven infants, ranging in age from 17 months to 3 years, are now in the Contagious Disease Hospital at Laurel Hill. This is said to be the greatest number of cases on record in the city since the epidemic of July, 1916. Four of the children sent to the hospital were taken from the Whittier Settlement House.

One of Eight Chiropractors Pass Examination.—At the annual meeting of the state board of medical examiners at Asbury Park, July 5, it was announced that only one of eight chiropractors who applied for licenses had been passed. The secretary of the board reported that fifty-seven out of the sixty-two applicants for medical licenses had been passed. Dr. William Perry Watson, Jersey City, was elected president of the board, succeeding Dr. Joseph H. Bryan, Asbury Park. Dr. James J. McGuire, Trenton, was reelected treasurer and Dr. Alexander MacAlister, Camden, was reelected secretary.

NEW MEXICO

Personal.—Dr. Emmett I. Vaughn, who has been engaged for several years in Central America and Mexico in health work for the Rockefeller Foundation, New York, has been appointed health officer of Eddy County.——Dr. Harry A. Miller, Clovis, has been appointed by the governor a member of the public welfare board, and Drs. A. M. Smith, Farmington, and William R. Lovelace, Albuquerque, members of the state board of medical examiners.

NEW YORK

Park Presented as Memorial.—Dr. Haven Emerson has presented a park, a natural wooded tract on the shore of Peconic Bay, to the town of Southold as a memorial to its soldiers killed in the World War. Dr. Emerson has a country home in that vicinity.

School for Problem Boys.—Edwin Gould has donated $30,000 to the Berkshire Industrial Farm School for Problem Boys, Canaan, N. Y., for the construction of a kitchen and laundry building. The school has at present eight buildings and when completed will accommodate 140 boys.

Business Men Endorse Vaccination.—The state chamber of commerce recently passed a resolution commending the New York City Health Department for its campaign in behalf of smallpox vaccination and concluded its memorial by urging its own members to set an example to the community by being vaccinated.

Smallpox Quarantine Removed.—The spread of smallpox, which has been prevalent in the township of North Hempstead, L. I., for six weeks, has been checked and the quarantine removed from every house in which there has been a case. During the epidemic, eighty-four cases were reported in the surrounding township. There were no deaths.

Veterans' Bureau Hospital Site.—The 1,000 bed hospital to be constructed by the U. S. Veterans' Bureau in the New York district will be located near Northport, L. I. A tract of 500 acres on the north shore has been acquired, and surveys are being made preparatory to constructing the hospital. The institution will be for neuropsychiatric patients and will cost between $2,000,000 and $3,000,000.

Typhoid Outbreak.—An outbreak of fifteen cases of typhoid fever in Nyack and four in Hackensack, N. J., have been traced, it is reported, to a spring supplying drinking water to Hook Mountain beach in Palisades Interstate Park. Other cases have been reported in nearby towns. It is said that at least fifty cases in the countryside are attributed to this spring, which was closed, July 7, pending an investigation by the state department of health.

Hospital News.—Ground was broken, June 22, for the new building of Mary Immaculate Hospital, Jamaica, which will be erected at a cost of $1,500,000.——James C. McGuire was elected president of the Knickerbocker Hospital, New York City, at a special meeting of the board of directors, June 20. He has been a member of the board of directors for more than twenty years.——Rochester will construct a $240,000 municipal hospital building adjacent to the new University of Rochester plant.

Increase in Alcoholism.—There were eleven times as many deaths in New York from alcoholism in May, 1925, as the number recorded for the corresponding month in 1920, a year when deaths from alcoholism was at a minimum following the advent of prohibition. The seventy-nine deaths from alcoholism in May, according to the state health commissioner, probably represent only a small portion of the people who died from either "bad liquor" or the excessive use of alcohol. The number of deaths from alcoholism has increased annually since 1920.

New York City

Child Welfare Employees Dismissed.—The Child Welfare Commission offices in the Children's Court Building have been closed and the state board's staff of employees dismissed. The legislature failed at the last moment to make an appropriation for the commission, so it is unable to continue work. The commission was preparing to give attention this summer, among other things, to the conduct of baby-farms.

Radio Stations Discontinue Landis Advertising.—Word comes now, says the New York *Medical Week*, that Station WMCA at the Hotel McAlpin and the company that controls the subway and elevated railway posters have put an end to Landis "ads." The first steps in the campaign against the advertising of Dr. Leonard L. Landis was the discontinuing of the House of Health talks by Stations WFBH and WHN.

Underground Sewage Plant.—New York has recently installed and is now operating a sewage screening and chlorinating plant to eliminate pollution of New York Harbor. It is located entirely underground, 35 feet below the street level, and has a capacity of 40 million gallons of sewage daily. This plant serves the area bounded by Fourteenth Street on the North and Broadway on the East. The cost of construction was about $400,000.

Personal.—Dr. Henry Keller has been appointed attending orthopedic surgeon to the Central Neurologic Hospital, Department of Public Welfare.——Prof. Wilhelm Neumann, Vienna, arrived in New York on the *George Washington*, July 2.——Arthur H. Estabrook, Ph.D., was elected president of the Eugenics Research Association at the annual meeting, Cold Spring Harbor, Long Island, June 27.——Helen P. Woolley, psychologist of the Merrill-Palmer School, Detroit, has been appointed director of the Institute of Child Welfare Research and professor of education, with a seat in the faculty in Teachers' College, Columbia University.

Pasteurizing Regulations Proved Adequate.—Nearly three years' research has demonstrated that the regulations adopted by New York City for the pasteurization of milk are adequate, it was stated at the Museum of Hygiene of New York University and Bellevue Hospital, July 1. In the tests, tuberculosis, typhoid, paratyphoid, diphtheria, septic sore throat and other germs were used, typhoid bacilli being grown in milk until it contained 2,000,000 bacilli per drop and tubercle bacilli until they existed in samples at the rate of 30,000,000 germs to the teaspoonful. The contaminated milk specimens were then pasteurized in the manner laid down by the New York Health Department, and sterilization was found to be complete. There were in all 6,574 tests made. The investigation was started three years ago after charges had been made that the pasteurization rules of the health department were insufficient. The Borden Company turned over its plant at Endicott for the work. Dr. Hugh S. Cumming and Charles Armstrong of the U. S. Public Health Service, and Drs. Milton J. Rosenau, Augustus B. Wadsworth and others collaborated in the experiments.

OHIO

Physician Sentenced.—Dr. Charles R. Walsh, Cleveland, it is reported, was taken to the Ohio penitentiary, July 3, to serve a four year sentence, having been found guilty of performing an illegal operation.

Smallpox Quarantine.—Because of the spread of smallpox in Cleveland in a district bounded by Buckeye and Kinsman roads and East One Hundred and Twenty-Sixth and East One Hundred and Thirty-Fourth streets, 30,000 persons in that area were quarantined a few days ago. There were then seven cases of smallpox in the district. A canvass was made, and persons not showing satisfactory evidence of vaccination were vaccinated. There were four deaths in Cleveland from smallpox in June.

Arrests for Dry Sweeping.—Thirty persons were convicted and fined in municipal court at Cincinnati during June for sweeping the sidewalks in violation of an ordinance which provides that it shall be unlawful to sweep any sidewalk when the temperature is above the freezing point unless it shall have been sprinkled with water sufficient to avoid raising dust. More than 1,500 merchants up to July 10 had pledged their cooperation to carry out this ordinance, and circulars were distributed for signature pledging individuals to flush their sidewalks daily.

New Laws.—The eighty-sixth Ohio general assembly enacted 224 new laws, to become effective between April 15 and July 23. One of these requires the reregistration of dentists in Ohio every five years; this became effective, July 10. Another requires that all practitioners of "the limited branches of medicine" take an examination for licensure regardless of whether or not they practiced for five continuous years prior to 1915, when the act was passed; this became effective, June 8. Another requires school enumerators to submit a list of all crippled children to the juvenile court, which will certify the list to the county health commissioner for investigation and examination, the results of which he will furnish to the state health department, which may then apply to the juvenile court for authority to place children needing treatment in the custody of the state welfare department.

PENNSYLVANIA

Industries Must Not Pollute Water Supplies.—The Pennsylvania Supreme Court recently rendered a decision that the discharge of acid coal mine waste into a public water supply created a nuisance which must be abated. The suit was brought to restrain about twenty coal companies and individuals from polluting Indian Creek with drainage from coal mines. The lower court held that to stop the pollution would deprive the mine owners of their rights without due process of law. The higher court ruled, according to *Health News*, that the mine owners "have no right of any kind to drain their mine waters into the stream, considering the public use which is made of its waters," and that the Sanderson case, which for years has been considered as governing similar situations in favor of mine owners, did not apply in this case.

Philadelphia

Personal.—Dr. William W. Keen received the first award of the Susan Colvin-Rosenberger medal of honor at the commencement of Brown University, June 17.——Alfred N. Richards, Ph.D., professor of pharmacology, University of Pennsylvania School of Medicine, received the honorary degree of doctor of science at the commencement of that school, June 17.——Dr. John A. Kolmer, professor of pathology and bacteriology, Graduate School of Medicine, University of Pennsylvania, addressed the Lycoming County Medical Society, Williamsport, July 10.——Dr. James Hendrie Lloyd has resigned as visiting chief in neurology at the Philadelphia General Hospital, and Dr. Edward A. Strecker, medical director, women's department, Pennsylvania Hospital for Mental and Nervous Diseases, and recently appointed professor of mental and nervous diseases at Jefferson Medical College, has been named to succeed Dr. Lloyd.

TENNESSEE

Personal.—Dr. Arthur W. Wright of the Boston City Hospital, Boston, has been appointed assistant professor of pathology at Vanderbilt University Medical School, Nashville. ——Dr. Hermon Hawkins was appointed city health officer of Jackson to succeed Dr. Frank Murtaugh.

Hospital News.—St. Joseph's Hospital, Memphis, is building a $400,000 addition, which will provide 150 private rooms, offices and two operating rooms. —— The city of Dayton recently voted to contribute $30,000 to construct the Rena Clark Haggard Memorial Hospital, for which Mr. Haggard donated $40,000. The city will name one of the three trustees. ——The Memorial Hospital, Jackson, which takes the place of the old Civic League Hospital, was recently opened. The board of the old hospital will continue in charge of the new.

Health Scholarship.—Mrs. Katie Bell Conyers, a teacher in the Memphis public schools, has been awarded a health scholarship for $500 in a contest among students in a special course in public health for school teachers, conducted by the superintendent of health of Memphis, the object of which was to furnish teachers special instruction along public health lines, so that their pupils might develop good health habits. The Metropolitan Life Insurance Company provided the award, which was in addition to awards granted last year among elementary school teachers in fifty cities.

TEXAS

Judge Upholds Vaccination.—Following a smallpox epidemic in San Antonio, during which the health authorities ordered school children vaccinated, the ordinance authorizing vaccination was attacked and the case was taken before the court of civil appeals. The ordinance was upheld.

State Board of Health.—The governor has appointed the following physicians members of the state board of health: Drs. Murff F. Bledsoe, Port Arthur; Robert W. Noble, Temple; Edward L. Rose, Port Arthur; Albert H. Braden, Houston; Eugene L. Lawrence, Thorndale, and Phil Russell, Fort Worth. The state health officer, Dr. Harry O. Sappington, is president and executive officer of the board.

WASHINGTON

Applicants for Licenses. — Fifty-five applicants took the examination, July 6, at Olympia for a license to practice medicine and surgery in the state, it is reported. This is one of the largest groups of applicants in the history of the state.

Chamber of Commerce Disapproves Hospital Campaigns.—The committee appointed by the Chamber of Commerce of Seattle to investigate the hospital situation reported that there are now under consideration proposals to raise for the Seattle General Hospital, $1,200,000; Baptist Hospital, $500,000; West Seattle Hospital, $200,000; Swedish Hospital, $200,000. The first three represent $1,200,000 in contributions and $700,000 in bonds, while the last one has, privately, arranged for funds. The committee found that: 1. Practically all hospitals in Seattle do some charitable work but that the great bulk of it is done by the city and county hospitals. 2. There are considerably fewer hospital beds in Seattle than the number required by certain well known standard requirements, yet no emergency exists in regard to hospitalization. 3. The campaigns contemplated are not based on a scientific study of hospital needs. 4. Greater efforts should be made toward coordinating the campaigns efficiently to secure relief, and the continuation of the present campaigns for funds will endanger the success of any one of them and probably adversely affect any campaign for necessary charities. The committee recommended that the chamber of commerce withhold its endorsement of any hospital plan proposed to be financed by subscription or local bond issues until a complete survey determines the hospital situation and needs and the best method for meeting the need. The trustees of the King County Medical Society, as well as the chamber of commerce, approved the report.

WEST VIRGINIA

Governor Appoints Chiropractors on Public Health Council.—Following the recent passage of the bill creating a state board of chiropractic examiners, the governor has appointed two chiropractors to be members of the West Virginia Public Health Council.

Dr. Guittard Resigns.—Dr. Virgil D. Guittard, who came to Wheeling two months ago from Maysville, Ky., to be county health officer, has resigned and accepted a similar position in Michigan. Dr. Charles C. Hedges, Grafton, has been appointed to succeed him.

Society News.—Dr. Grover Cleveland Weil, Pittsburgh, recently addressed the Ohio County Medical Society, Wheeling, on "Fractures of the Pelvis"; Dr. Harold A. Miller, Pittsburgh, on "Toxemias of Pregnancy," and Dr. George J. Heurer, Cincinnati, on "Empyema."

Personal.—Dr. William H. McLain has been reappointed health commissioner of Wheeling for a term of four years. ——Dr. Joseph E. Rader has been appointed city health officer of Huntington, and Drs. Benjamin L. Hume, Charles L. Hopkins, Joseph C. Ford and Simpson A. Smith have been appointed city physicians.——Dr. Lucian N. Yost, Fairmont, for many years health officer of Marion County, has resigned to resume private practice.——Dr. Henry F. Spillers, Wheeling, has been appointed superintendent of the Ohio Valley General Hospital to succeed Dr. Charles Wilkins, deceased.

WISCONSIN

Music Doctor Arrested.—In a campaign against alleged illegal practitioners, the first person arrested was Hyland Slater-Wilson, a musician of Kenosha, who also conducts a health institute claiming to cure certain diseases by music.

Dr. Frick Pleads Guilty.—The *Wisconsin Medical Journal* notes that Dr. Lewis Frick, Athens, has entered a plea of guilty in the U. S. District Court to charges of conspiracy to violate the Volstead Act by selling his prescription book to a druggist.

New Restrictions on Chiropractors.—The new law relating to the practice of chiropractic in Wisconsin provides that no person shall practice unless he shall have, among other things, a certificate of registration in the basic sciences (THE JOURNAL, June 27, p. 2011). The law also restricts advertising by chiropractors and prohibits them from using the title of doctor.

Governor Signs Single Permit Bill.—A law becomes effective, Jan. 1, 1926, which substitutes a single permit for physicians to prescribe liquor instead of the present triplicate system under the state prohibition enforcement act. At present physicians must have separate permits, with a fee of $10 for each of the so-called "privileges" which are given as one in the federal permit. This law will save the physicians of Wisconsin, it is estimated, from $5,000 to $7,500 a year.

War on Socialized Medicine.—The Kenosha County Medical Society, Kenosha, has devoted all its meetings this year except one "to waging war on socialized medicine, pseudo-charity and illegal practitioners of medicine." At the first open meeting, the city manager, a member of the city council, the health commissioner, the poor commissioner and a representative from each of the organizations interested in charity (Community Chest, City Free Clinic and Service League) were invited. The medical society called attention, among other things, to the errors of activity of social workers under the direct supervision of the health department, Service League and City Free Clinic, wherein some of them were said to have made diagnoses, prescribed treatment and criticized and recommended physicians to patients.

WYOMING

License Class A Graduates Only.—The Wyoming Board of Medical Examiners has adopted a resolution that it will recognize as applicants for a license only graduates of Class A medical colleges.

CANADA

Personal.—Dr. Charles H. Best, Toronto, associate of Dr. Banting, will leave this month for Europe to spend a year in medical research.

Society News.—At the fifth annual meeting of the Canadian Society of Anesthetists recently in Toronto, Dr. Charles Larocque, Montreal, was elected president; Dr. Charles H. Bastin, Vancouver, vice president, and Dr. Harry J. Shields, Toronto, secretary-treasurer. The executive officer for the United States is Dr. Everett A. Tyler, Philadelphia.

GENERAL

Independence Day Fatalities.—The total holiday fatalities throughout the country, July 4, it is reported, amounted to 250, as the result of automobile accidents, drowning and fireworks. The day passed with few deaths from fireworks and explosions. New York accounted for twenty-six of the fatalities, and Massachusetts, forty-nine.

American Board of Otolaryngology.—At the examination held by this board in Philadelphia, May 26, 157 applicants were examined, of whom 137 passed and twenty failed. The next examination will be at the University of Illinois School of Medicine, Chicago, October 19. Applications may be secured from the secretary, Dr. Hanau W. Loeb, 1402 South Grand Boulevard, St. Louis.

Veterans' Bureau Bulletin.—The United States Veterans' Bureau has undertaken the publication of a medical bulletin, the purpose of which is to maintain a high standard of medical service, to promote research and to present the results of study of medical statistics contained in the records of the bureau. The associate editors are the members of the U. S. Veterans' Bureau Medical Council.

Society News.—The fourth annual Congress of Anesthetists marked the thirteenth annual meeting of the American Association of Anesthetists, now the Associated Anesthetists of the United States and Canada, which was organized in 1912, and the fifth annual meeting of the International Anesthesia Research Society.——The American Academy of Physiotherapy will hold its fall meeting, October 15-17, at the Copley-Plaza Hotel, Boston.

Trachoma Headquarters Moved.—The headquarters of the trachoma eradication work conducted by the U. S. Public Health Service, which have been at Louisville, Ky., were moved, July 1, to Rolla, Mo. Surg. Paul D. Mossman, who will continue in charge of the work, has been directed to proceed, with commissioned personnel and other employes, to such places in Ohio, Indiana, Illinois, Kentucky, Tennessee, Arkansas, Missouri and Minnesota as may be necessary for the proper conduct of trachoma prevention work.

Chiropractors Reject Code of Ethics.—The convention of chiropractors of the east, whose session ended at Atlantic City, June 28, rejected the proposal of a committee for a code of ethics for that cult. The reason was, according to the Atlantic City *Press*, that, since the cult is comparatively new, "a regulatory formula at this time might be injudicious." One of the regulations of the proposed code of ethics, it is said, would prohibit one chiropractor from treating a patient known to be under the care of another chiropractor unless he should happen to know that his brother practitioner is a professional inferior. This was strongly opposed.

Hospital Association Employment Bureau.—The board of trustees of the American Hospital Association has inaugurated an expansion of the employment bureau of the association which has been maintained for the benefit of its members. The bureau will operate now on a business basis, the actual cost of the work of the bureau being deferred by those who secure positions through its efforts. Mr. Asa S. Bacon, superintendent, Presbyterian Hospital, Chicago, Dr. Arthur C. Bachmeyer, superintendent, General Hospital, Cincinnati, and Dr. William H. Walsh, executive secretary of the association, have been assigned to formulate regulations to conduct this work.

Immigrants' Examination at Foreign Ports.—The new arrangements of the federal government to determine whether or not medical and eligibility examinations of immigrants may be performed successfully at embarkation ports began with the departure from New York of immigration inspectors to act as technical advisers to consuls in seven European ports. The Secretary of the Treasury has also assigned public health surgeons to act as medical examiners at the consulates at London, Liverpool, Southampton, Glasgow, Belfast, Dublin and Cork. By examining prospective immigrants prior to isuing passports, the government hopes to reduce to a minimum the number turned back at the ports of debarkation after they have made the trip to the United States. If the experiment now begun proves successful, it will be extended at a later time to other European ports.

Child Welfare Legislation.—There was a decrease in the amount of child welfare legislation introduced in the forty-two state legislatures that met this year, compared with 1923. According to the Children's Bureau, Washington, D. C., a children's law commission was created by Rhode Island, the Pennsylvania and Delaware commissions were continued for two years, the Utah and New York state commissions have been discontinued. The South Dakota commission introduced ten bills, four of which passed in amended form. The maternity and infancy act was accepted this year by Rhode Island, Vermont and Hawaii, making a total of forty-three states and Hawaii that cooperate under the act. The child labor amendment was rejected by both houses in eighteen states, two other states having done likewise in 1924; one house in each of seven other states rejected it (one other in 1924). Bills to raise the standards of child labor were rejected in New Hampshire, North Carolina, New York, Rhode Island and Wyoming. Oregon passed a law requiring the physical examination of all school children during the first month of the school year, provided the parents do not object. Bills relating to mothers' pensions were introduced in a number of states; South Dakota passed a law making the existing mothers' pension law applicable to unorganized counties; North Carolina cut its mothers' pension appropriation from $50,000 to $30,000, and North Dakota passed a law making more strict the procedure through which pensions are obtained. Other legislation affecting child welfare was passed and the information received by the children's bureau from the states is not yet complete.

FOREIGN

Change of Date.—The sixth meeting of the Far Eastern Congress of Tropical Medicine, which was to have met in Tokyo, Oct. 18, 1925, will meet a week earlier than was expected, beginning October 11 and continuing to October 31.

New Medical School in Japan.—The construction of a new department of medicine, to cost approximately 700,000 yen, has begun and will be completed by next March. It will be a four story structure of reinforced concrete, and Dr. Y. Nukada will be chief of the department.

Compulsory Notification of Pregnancy.—According to the U. S. Public Health Service, medical and social leaders of France are demanding that the early notification of pregnancy be made compulsory, so that venereal disease may be detected and the danger to the unborn child prevented.

Personal.—Sir Auckland C. Geddes, former British ambassador to the United States, has accepted the presidency of the British Social Hygiene Council.——Prof. Hans Eppinger of the First Medical Clinic, Vienna, has been called to the chair of internal medicine at the University of Prague.

Association of Donors of Blood.—An association of donors of blood has been formed by the London Scouts and will be known as the "Rovers." On receipt of instructions to report, a "Rover" will go to the hospital in need of his service, his

blood having been previously tested. A free day and night service is maintained. Any loss of wages will be recompensed by the blood transfusion service.

Antiquackery Exposition.—The German Antiquackery Society has organized a permanent exhibition in the Kreuzberg district to educate the public as to the dangers of quack practices. It is installed in the museum for social hygiene, and is appealing for the loan or donation of articles, quacks' prescriptions, and other data to promote the aims of the exposition. The address of the society is Motzstrasse 36, Berlin-Wilmersdorf.

Informal Association of Instructors in Roentgenology.—After the World War, a committee of university instructors in roentgenology was formed in Vienna to exchange experiences and study the progress made. The idea has found favor, and in response to letters, sixty-one university instructors have contributed literary and statistical material, including instructors from Germany, Austria, Russia, Roumania, Switzerland, Hungary, Jugoslavia and Czechoslovakia. All university instructors in "medical roentgenology" who have not yet received this letter are invited to participate in the work. The announcement says that through the collection, at a central point, of information on the progress of roentgenology, outlines of courses, lists of instructors and other things, further progress would be stimulated. The names of the organizing committee comprise those of Professors Holzknecht, Haudek, Kienböck and Weber.

Proposed Medicolegal Institute.—At the annual meeting of the Medico-Legal Society at the Royal Society of Medicine, June 23, under the presidency of Lord Justice Atkin, a resolution was unanimously adopted "that this meeting expresses its general approval of the proposal for establishing a medicolegal institute and requests the committee to take such steps as it may think necessary to develop the proposal in cooperation with all interested parties, with power to add to its number." Lord Atkin said, according to the *Lancet*, that no one who had had anything to do with the administration of justice in England could fail to appreciate the extraordinary importance of the proper development of medicolegal learning in reference to securing that justice is done; no session of any criminal court was ever held where topics of the greatest medicolegal importance were not introduced, and hence where it was not of the utmost importance that highly informed expert advice should be placed before the court. The committee will report to the society from time to time when definite results have been obtained.

Deaths in Other Countries

Robert Henry Scanes Spicer, Chelsea, England, president of the section for nose, throat and ear disease of the British Medical Association in 1900, and a frequent contributor to medical journals, June 18, aged 68.

CORRECTIONS

Date of Graduation.—THE JOURNAL, July 4, p. 44, erroneously noted the age of Dr. George David Stewart as 89. Dr. Stewart graduated from medical school in 1889.

Number of Typhoid Carriers.—The number of typhoid carriers in the state of New York, noted in THE JOURNAL, July 4, p. 43, does not include those which are in New York City.

Government Services

Health of Troops Abroad

For the first seventeen weeks of 1925, the troops of the army stationed in China had the highest admission rate for disease and those in Hawaii the lowest. The troops in Panama had the highest rate for injury, those in China second, in the United States third, and in the Philippine Islands the lowest. The apparent reason for the excess admission rate for disease in China, according to the Surgeon General's office, was, as usual, the exceedingly high rate for the common respiratory and venereal diseases. The admission rate for venereal disease in China was more than twice as high as that for troops in Panama, which was second; the Philippine Islands was third, the United States fourth, and Hawaii the lowest. The rates for the common diarrrheas and malarial fevers were highest in the Philippines and second in Panama.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 27, 1925.

The Prevalence of Dental Disease

The forty-fifth annual meeting of the British Dental Association has been held in London. Dr. Badcock, in his presidential address, spoke of the alarming prevalence of dental disease. The educated public was beginning to realize how grave were the effects of diseased teeth and gums on general health, but there still remained an appalling sense of indifference and neglect. Diseases of the teeth and gums not only gave rise to indigestion and malnutrition by making efficient mastication difficult or impossible, but did even more serious harm as sources of bacterial poisons. In the opinion of the Prudential Insurance Society, with a membership of 3,000,000, neglect of the teeth was the cause of half the ill health found among the industrial classes. Mr. F. D. Acland, chairman of the dental board, had stated that 86 per cent. of children in the elementary schools of England and Wales—and there were between six and seven millions with something less than 500 dentists to care for them—suffered from bad teeth. In some parts of the country it was 96 per cent., with an average of five bad teeth per child. At least 85 per cent. of the population under 20, and an increasing percentage over that age, were sufferers from dental disease. There was a higher incidence among women than among men. Dental disease was to be found among all civilized peoples, but we in these islands undoubtedly exhibited a bad preeminence. Taking in conjunction with the widespread prevalence of oral disease, and the variety and gravity of its effects, it was evident that we were face to face with a problem of the first magnitude. Dental disease was sapping the strength of the nation no less seriously than was venereal disease. A very small percentage of the food eaten today, especially by the poorer classes, was fresh and untreated chemically. Cheap sugar and white bread were modern products, and there was an enormous and progressive increase in the consumption of sweetmeats, biscuits, sweet cakes, jam and marmalade—compounds that adhered to the teeth and gums and fermented with great rapidity. So today the population lived largely on food injurious to the teeth by reason of its physical properties and chemical composition, and deficiency in certain components. This wrong feeding often began with the baby deprived of its mother's milk. The remedies for gum and tooth disease alike were right diet and a clean mouth.

The Ethics of Birth Control

Birth control has become one of the burning topics of the day for politicians, social reformers and religious leaders. It is the subject of lectures and debates. A book advocating it has had an immense circulation and has been followed by a book attacking it. The latest publication on the subject is "The Ethics of Birth Control," a report issued by a special committee appointed by the National Council of Public Morals. The history of the inquiry goes back to 1913, when, with official recognition, the National Council of Public Morals established the National Birth-Rate Commission. This commission made important investigations and issued three reports. The special committee was appointed as a result of these investigations. It had as president the Bishop of Winchester and consisted of men and women in various walks, including clergymen, physicians and social workers. Among those who gave evidence before it were Lord Dawson (physician), the Bishop of Guildford, Mr. Harold Cox

(politician and economist), Lady Barrett (physician) and Miss Maude Royden (preacher). An important passage in the report is as follows:

> Broadly speaking, our generation is too much occupied with problems of sex to see calmly and clearly. This is due in part to reactions—some of them very healthy—from Victorian conventions, in part to the new interest in sex from the psychological standpoint, and in part to the fundamental change of attitude as to woman's position and work which the last half century has seen.

The committee explains that it deals solely with the ethics of birth control within the married state. A Christian outlook is assumed, which means that:

> Life is lived with a background of eternity; the formation of character concerns our future as well as our present existence; self-gratification is not the true purpose of life; the family is a divine institution.

Normally, the committee thinks that each couple should look forward to a family of four or five children at the least; but it has sympathy for persons in straitened circumstances who resort to contraceptive methods in fear of grave difficulties of bringing up a family of even moderate size. It deprecates, however, the exaggerated notion of some parents as to the best method of attaining their ideals of education, who assume that a public school and a university education are necessary. The committee recognizes as more serious drawbacks to parentage the high cost of living and the inadequacy of house room. Nor, seeing that prudence dictates the regulation of the size of the family by the resources, is it surprised that many have had recourse to conception control. The main conclusions of the committee are as follows:

1. The comparatively modern practice of conception control, and in particular the artificial methods, call for fuller investigation from the medical, economic and religious standpoints.
2. The use of contraceptives is a symptom of the artificial character of our civilization whereby for large numbers a normal married life is difficult and in some cases all but impossible.
3. In numerous cases control of conception, apart from the question of the methods, is medically necessary and economically advisable, but all the circumstances should be weighed in the light of the best available scientific and ethical counsel.
5. While there are persons approaching the matter from the highest motives in whose judgment the use of contraceptives is justifiable, the practice opens the door to grave social perils, and a serious responsibility lies on married people who adopt it.
6. Our knowledge is not such as to justify either the advocacy or the condemnation of these means on the ground of alleged dangers of overpopulation; but within the British Empire the time is ripe for a campaign of empire-settlement and redistribution of population.
7. The weightiest argument for birth control is found in the economic circumstances (wages, inadequate housing and the like) of many.
8. The capacities for self-control, especially in young persons, are often underrated, and their training in this respect, as also in the ideals of married life, is a primary duty.

Some of the clerical members of the committee, while in cordial agreement with the greater part of the report, express the reservation "that the use of contraceptives is a frustration of God's design in nature" and unjustifiable in any circumstances. A medical member (Dr. C. J. Bond) thinks that the wider use of contraceptives by the more educated and prosperous classes may exercise a dysgenic effect, though future conditions may necessitate control of the "output of human life." Sir Hermann Gollancz (professor of English literature) signs the report but notes that there are points to which, as a Jew, he cannot subscribe. The failure of the committee to formulate definite conclusions, in spite of considerable labor, is noteworthy.

A Rebuff to Calcutta University

The General Medical Council has decided to withdraw the recognition hitherto given to the M.B. degree of Calcutta University. The action of the council marks the culmination of a protracted dispute between it and the university authorities. Five years ago, the council addressed Calcutta University on the need of improving the practical midwifery course, and intimated that recognition of the Calcutta M.B. degree depended on how far that university was able to satisfy the council on this point. From time to time, improvements were introduced to facilitate practical training in midwifery, but not such as to satisfy the council. In 1922, Colonel Needham, the inspector on behalf of the council, asked permission to inspect for the final M.B. examination of Calcutta University. This request was refused, and the sequel was the intimation that the medical council's recognition of the degree would be withdrawn as from November, 1924. The reason given was that the council, having been refused facilities for inspection, was unable to judge whether training was of a sufficiently high standard to justify recognition of the university's degrees. The point is being raised that the council was not entitled to withdraw recognition, which was not based on the right to inspect examinations, but simply on the principle of reciprocity.

Failure of Maternity Benefit in Australia

During the first eleven years of the operation of the Commonwealth Maternity Allowance Act, nearly $38,750,000 was paid to mothers in Australia as the $25 baby bonus. Practically every woman who has had a viable child since July 1, 1913, has claimed the bonus. The royal commissioners, in their report on national health insurance, call attention to the fact that the puerperal mortality and the infantile mortality have remained practically undiminished between 1905 and 1924. The former is given as 5.1 per thousand registered births; the latter is given as 60.5 per thousand births. In 1913-1914, 64 per cent. of the mothers were attended by physicians, and in 1923 and 1924, 79 per cent. In spite of the material increase in the frequency of attendance by physicians, the puerperal mortality has not diminished. Thus, like other socialistic schemes, the maternity bonus has failed in its objective. The Federal Committee of the British Medical Association in Australia has suggested certain remedies for the waste of maternal life and health and for the sacrifice of infant life. These include the better training in obstetrics of medical students and nurses, the extension of maternity hospitals, antenatal clinics and infant welfare centers and the provision of help for mothers and expectant mothers in necessitous circumstances. The commissioners now recommend an extension of the bonus system in a slightly changed form. They suggest that female insured persons and the wives of insured men should receive $5 a week for two weeks before and for four weeks after confinement. The *Medical Journal of Australia* comments editorially on the results of the maternity benefit and questions whether health departments should be charged with the supervision and direction of maternal hygiene.

The Imperial Bureau of Entomology

The second Imperial Entomological Conference has been held in London. More than twenty of the oversea governments sent delegates to the conference. There were papers and discussions on entomologic subjects of a general character, such as "The Influence of Natural Migration on Outbreaks of Pests," "The Aims and Organization of Economic Entomology," "The Education and Qualifications of an Economic Entomologist," and "Coordination of Effort in Tsetse-Fly Investigations," as well as subjects of a more specialized and technical character. The conference was summoned by the secretary of state for the colonies at the instance of the Imperial Bureau of Entomology, acting on a resolution passed at the conference in 1920 that such meetings should be arranged every five years. It is sixteen or seventeen years ago that the authorities of the colonial office said, "We have discovered that insects are more important than languages"; and after some important discussions, a tropical African entomologic research was set up. The work done has been considerable. During the past year the number of insects

identified has exceeded all records. The total number of collections received was 347, sent in by 134 different correspondents, of which those in Africa head the list with forty-two. These collections contain 63,700 specimens, of which 8,600 are blood suckers. The investigation of these large collections involved the preparation of 275 lists of identification, comprising more than 8,000 specific names. All type specimens are presented to the British Museum, which last year received 247 species new to science and nearly 400 species not till then represented in the national collection. The bureau issues monthly the *Review of Applied Entomology*, in two parts, one dealing with insects that attack plants, the other with insects that attack man and other animals. The review includes 900 British and foreign publications, and all papers with reference to injurious insects, in any known civilized language, are abstracted. In the year just ended, 2,500 abstracts were published. The bureau from time to time issues separate monographs, such as that on the tsetse-fly, by Major E. E. Austen and Mr. E. Hegh. It also publishes quarterly the *Bulletin of Entomological Research*, which contains original papers of the utmost importance to all engaged in fighting insects. The library is a large one, containing more than 4,000 bound volumes and nearly 8,000 pamphlets, and the classified card index now comprises 36,000 cards. A recent development is the breeding of beneficial parasites for shipment overseas with a view to the control of some insect pest that has established itself where no local parasite is discoverable. Special parasites have thus been successfully introduced into New Zealand and Nigeria, but there is much scope for expansion in this direction, if the necessary funds are available. Among the insect pests to which the bureau has directed attention, probably the most important is the tsetse-fly, which conveys trypanosomiasis to man and the deadly disease nagana among domestic stock. From the Sudan to Barotseland fly areas exist, and similar patches are found in southern Rhodesia and Zululand. Unfortunately, these patches are continually expanding. In the year 1923 the fly encroached in no fewer than seven places in one subdistrict of Tanganyika, and the Abercorn cattle district in northeastern Rhodesia is now surrounded by infested areas. Similar instances can be cited all over tropical Africa. The problem in its magnitude is overwhelming. So serious is the matter that the health section of the League of Nations has interested itself in it, and recently a conference was held between representatives of Belgium, France, Great Britain and Portugal, with the result that proposals have been drawn up for an international commission to set to work in Uganda on the medical side of the problem.

PARIS

(From Our Regular Correspondent)

June 23, 1925.

Prophylaxis of Leprosy in Indo-China

In a recent number of the *Presse médicale*, Medical Inspector Audibert, director of the Service de Santé in Indo-China, gives an interesting account of the prophylactic methods employed against leprosy. The total number of lepers registered in Indo-China for the year 1923 was 5,813, of whom 4,454 were interned in leprosariums or segregated in villages; 283 were placed under administrative supervision; 956 had escaped and had not yet been apprehended, and 301 had been arrested but had not yet been interned. The ethyl esters of chaulmoogra oil are used at present in all the colonies of the federation. They are prepared in Cochin China, Cambodia and Annam from the seeds of *Hydnocarpus anthelmintica*, which is grown by the agricultural service. The addition of iodin has been discontinued, as it renders the intramuscular injections too painful, without increasing their efficacy to any great extent. The following technic is employed: The first week, 1 c.c. is injected; the second week, 1.5 c.c.; the third week, 2 c.c., and so on until a dosage of 5 c.c. has been reached. The patient is given also a tonic and mineral salts. The results secured are sufficiently favorable so that lepers frequently ask for injections whereas formerly they rebelled against treatment.

In the beginning a marked improvement in the general condition is noted, while the cutaneous lepromas, the ulcerations, and the perforating maculae retrogress perceptibly. After a time the improvement becomes slower, *Bacillus hansenii* seeming to adapt itself to the drug. Sometimes the treatment causes a temporary exacerbation and certain unfavorable symptoms, not of any particular importance but occasionally discouraging the patient.

Besides the ethyl esters of chaulmoogra oil, the natives employ a base of hydnocarpus and krabao, which is also efficacious. This treatment is given in the form of pills which contain numerous substances and which are willingly taken by the natives in spite of the gastric troubles they occasion. The partial therapeutic success does not lessen the imperative need of the isolation of the leprous. Domiciliary treatment has yielded deplorable results. Patients disappear never to return, in spite of their promises and threats of internment. Hospitalization does not seem to be just the right course; for, in so doing, there is danger of keeping other patients away, through fear of infection. Furthermore, hospitalization is very burdensome, since the treatment usually extends over a prolonged period. It is the unanimous opinion that the permanent restraint of the leprosarium is still needed. But, in order that such restraint may be less draconian and may be made as endurable as possible, the plan has been launched in Annam of establishing segregation villages such as had been created in New Caledonia. These villages, seven of which have now been provided for Annam, are intended for lepers who, for various reasons, cannot be isolated at home. Especially infectious cases, recalcitrant patients, the mutilated and the indigent are interned in these villages. Other patients are allowed a measure of liberty but are constrained to follow the prescribed treatment. The advantages of such an organization are evident: a more normal community life together with suitable employment, isolation of the infectious and the possibility of consistent treatment.

The adoption of the plan of segregation villages will, of course, result inevitably in an increase of the number of births among lepers. The usage in Indo-China permits a family to adopt the child of a leprous mother, provided the child is taken away from the mother within forty-eight hours after birth. But the infant will thus be deprived of its mother's milk, and either it should be provided with a wet-nurse, as the Assistance publique in France endeavors to do under such circumstances, or infant homes should be created.

The Immunization of Groups with Diphtheria Anatoxin

Antidiphtheric vaccination carried out with the Ramon anatoxin (diphtheria toxin treated with formaldehyd and deprived of its harmful properties but preserving its immunizing power and its flocculent capacity in the presence of antitoxin) is becoming more widespread and has been discussed in a number of articles. Recently, L. Martin, G. Loiseau and A. Lafaille took up the question before the Société médicale des hôpitaux de Paris and emphasized certain points. They had collected observations on 1,297 vaccinations in various groups.

In order to secure good immunization, the injections must be given at intervals of several weeks. At least two weeks should elapse between two injections, and the results are still better with intervals of three weeks. The first injection is preparatory and does not constitute a vaccination. The

second injection is, therefore, indispensable. A third injection is needed in certain very receptive subjects. Ninety-eight of the persons vaccinated became immune. Children bear the vaccination well, and they are the persons who should be vaccinated. In children it is not necessary to give a Schick test.

In adults who react more vigorously, it is well to detect the immune and the sensitive and to reserve vaccination for the sensitive. M. Zoeller of Val-de-Grâce, who has written some interesting articles on the question, first applies an intradermal test with dilute anatoxin, which shows the sensitiveness of the subject and protects hypersensitive subjects against troublesome reactions. It would not seem necessary to eliminate more than 0.5 per cent. in applying vaccination to any group.

The Memorial in Honor of the Members of the Faculty of Medicine of Paris Who Fell During the War

The Faculté de médecine of Paris dedicated recently the memorial erected in honor of its fallen heroes. This memorial, a bas-relief affixed in the grand vestibule of the main building of the faculté, is the work of M. Raoul Bénard. It is of noble simplicity, and represents a young physician of the army medical corps viewing thoughtfully a rural landscape devastated by shells and dotted with the graves of the dead, while litter-carriers are transporting the wounded through the side trenches that lead to the first-aid station. On the bas-relief are engraved the names of nearly 500 students and physicians of the Faculté de médecine of Paris who died for their country during the Great War. The list of names is surmounted by the following inscription engraved on the stone:

FACULTAS PARISIENSIS EREXIT, SUORUM MEMOR—1914-1918

This memorial was erected with funds raised by a popular subscription launched by the Société des amis de la Faculté de médecine. Generous subscriptions were sent in from all corners of the world. The dedication took place in the presence of the president of the republic.

MADRID

(From Our Regular Correspondent)

May 27, 1925.

Levaditi on Epidemic Encephalitis

Dr. Levaditi of the Pasteur Institute of Paris has given several popular lectures at the French Institute of Madrid on what he calls neuro-ectodermal diseases. These include rabies, infantile paralysis and epidemic encephalitis. Most of those in the audience were women. As usual in Madrid, few physicians attended. The first lecture on poliomyelitis was introductory to the second, epidemic encephalitis.

Epidemic encephalitis, he asserted, has caused 1,500 deaths in Paris and 10,000 in the whole of France. It is caused, as poliomyelitis, by a filtrable and invisible virus. Following the method used in poliomyelitis and other diseases produced by invisible viruses, encephalitis has been studied through the fixation of the virus in experimental animals. In the first study made in the Pasteur Institute, with the virus from the brains of Vienna patients, the disease could not be reproduced in the monkey. After trying other animals, the rabbit proved the one suited for the purpose. This has permitted the isolation of the fixed virus. In rabbits, after a four or five days' incubation, fever appears, and following a brief period of restlessness, the animal shows the somnolence that characterizes the disease in man. The virus has been isolated from the locus niger, where the center of sleep is located. The lesions consist of perivascular inflammation and neurophagia. It seems strange that all these filtrable viruses show predilection toward certain parts of the nervous system. For instance, the virus of poliomyelitis lodges in the cells of the anterior horns of the medulla; that of encephalitis in the cells of the locus niger, and that of rabies in those of Ammon's horn. Another peculiarity common to this virus and that of rabies is that its germs occasionally join cellular elements and then show affinity for acid dyes.

Levaditi described the researches that identified the virus of epidemic encephalitis with that of herpes. This work began with an observation of Levaditi himself, but the conclusions were drawn by other scientists. Encephalitic virus, as well as the rabic virus, spreads along the course of nerves. In the Pasteur Institute, the virus is frequently implanted in the cornea, and if the nerve is severed and isolated, the animal does not show encephalitis. In one case, the cornea was abraded in order to rub in the virus, and instead of the usual infection, a keratitis appeared. This fact would have been neglected had not some one found, in studying the herpes virus, that it also belonged to the invisible and filtrable strains. In studying further the probable similarity, the two viruses were found to be identical. The herpetic virus seems to be an attenuated encephalitic germ. This conception is very significant, since it suggests a series of attenuated or exaggerated degrees of virulence, marking the path from one disease to the other. Steps were taken to find the localization of the herpetic virus. In a young woman who, each spring, developed herpes on the dorsal surface of the forefinger, the skin of the finger was removed and replaced with skin from the abdomen. When Levaditi was in Madrid, a telegram arrived stating that the girl had developed the usual outbreak of herpes. The germ could not be in the skin, as this had been removed. It seems necessary to accept that the germ lodges in the nervous system.

Encephalitis, as well as poliomyelitis, spreads through the upper air passages. The virus then involves the nerves and brain and also makes its way to the saliva and nasopharyngeal discharges. Through these, new subjects are infected. If the mucous membrane is healthy, it resists the implantation of the virus; but if there is inflammation, the germ is able to enter the body. Dr. Kling of Sweden, in some recent studies, reached different conclusions as to etiology. According to him, the cause of the disease is a microscopically visible germ. He was so conclusive that the scientists of the Pasteur Institute felt compelled to repeat his experiments. Their results were very interesting. It was found that Kling had used unawares an infected rabbit. What he had taken for the encephalitic germ was the germ the rabbit already harbored when the encephalitic virus was injected. This germ is the cause of a microsporidiasis. This, strangely enough, is the disease that destroys the silk worm, so well known to Pasteur. The germ, encephalitozoon, has thus caused the first reported microsporidiasis in mammals.

Advances in the Study of Smallpox Vaccine

Another of Levaditi's lectures dealt with neurovaccine. In his introduction, Levaditi reviewed briefly the history of smallpox. Two centuries ago, the disease caused 800,000 deaths every year. Smallpox occupied the sixteenth place among the causes of death. Before Jenner, the only protection was by inoculation. Jenner showed that cowpox protects against smallpox. Here is another proof of the old saying that "no one is a prophet in his own country." England is precisely the country where they have been most backward in enforcing vaccination against smallpox. For more than half a century, vaccination has been compulsory in Germany.

A thorough study of smallpox and its causative virus, which is also invisible, and of cowpox and vaccinia, seems to suggest that the three are identical. In his studies of smallpox, Calmette gave an impetus to vaccination, the consequences of which may be far reaching. The smallpox vaccine is

obtained from the pustules in the abdominal skin of the calf. Calmette noticed, in injecting the vaccine intravenously in the rabbit, that if the abdominal area had been previously shaved, the vaccine pustules would develop there. On the other hand, Pirquet, in vaccinating the same subject repeatedly, saw pustules appear for three days, but after the third day the vaccine did not "take" any more. In three days, therefore, immunity had developed. This phenomenon, which Pirquet called allergy, was one of the starting points for our knowledge of the phenomenon of anaphylaxis discovered by Richet. Negri was the first who succeeded in filtering the smallpox virus. Thus, smallpox virus, resembling that of epidemic encephalitis, poliomyelitis and rabies, is also invinsible and filtrable. Heat may damage it, a disadvantage that proves very serious in tropical countries. In the Pasteur Institute, they have succeeded in preparing the vaccine in a dry powder. Dr. Borrell noticed that when the vaccine was inoculated in the cornea, the virus becomes fixed in its cells and forms granules which take some stains. For convenience, the cornea is placed on a slide, on which the cells show after staining.

In view of the many resemblances between the virus of smallpox and those of poliomyelitis, encephalitis and rabies, all of which involve the central nervous system, Levaditi wondered whether the smallpox virus might also become fixed in the nervous system. His first experiments proved negative, but after a change of experimental animals he succeeded in showing that smallpox virus shows a predilection toward the central nervous system. After several days' incubation, it causes a process in the brain of the rabbit, which ends in paralysis. For a century all efforts to purify smallpox vaccine have proved fruitless. Cultures in the brain of the rabbit will be pure, as any other germ would cause a rapidly developing encephalitis, very different from a smallpox infection. This pure vaccine from the brain of the rabbit is the so-called neurovaccine. In this connection, Levaditi repeated again, "no one is a prophet in his own country." In France, neurovaccine has not found much acceptance. However, in Spain, Dr. Gallardo of the Alfonso XIII Institute has repeated the experiments and has manufactured a million doses. The method presents several advantages, among which are the purity of the product and its small cost. Its potency is the same as that of the current smallpox virus.

After studying for many years the action of germs on the different tissues, Levaditi has divided them all into visible and invisible. A surprising fact is that visible germs attack mesodermal tissues, while invisible germs become fixed in ectodermal structures. His experiments in the Pasteur Institute suggest that an injury is needed for the growth of smallpox in the tissues. This trauma permits the development of cells, which the virus attacks more readily than normal adult cells. This is precisely what happens with cancer cells and radium, which acts especially on rapidly growing cells. Then smallpox virus was tried in experimental cancers. In some cases the changes resembled those produced by radium.

Tribute to Dr. Piñerua

As stated in a previous letter, Dr. Piñerua, professor of general chemistry in the Madrid Medical School, gave his farewell lecture some months ago. Quite a number of his former and present pupils attended the lecture. Several of them have now collected in a large volume a number of his papers. The book was presented to him in a solemn session held in the assembly hall of the National Academy of Medicine. The audience was not so large this time as on the previous occasion but contained prominent representatives of the medical, pharmacy and science schools. A number of speeches were made. In his capacity of a retired professor, Dr. Count de Gimeno was one of the speakers. Dr. Piñerua was also retired because he had reached the age of 70. It seems a pity that professors, still active, as Dr. Piñerua, Cajal and Count de Gimeno, should be compelled to retire. The measure, however, became a need through the fault of the professors themselves. Rather than leave, all of them used to submit certificates of efficiency. The situation finally became such that no professor ever retired. The universities were thus filled with old teachers whose only claim to respect was their senility. Perhaps it would be a good thing to have a system similar to the one prevailing in France. There any professor still capable may give postgraduate or research courses but must remain free of routine teaching.

VIENNA

(From Our Regular Correspondent)

June 26, 1925.

Opportunities in Vienna for Postgraduate Medical Study

Special consideration has been given this year, in the courses of instruction in the medical department of the University of Vienna, to physicians who are not associated with a large hospital but are located in small towns. Every quarter, a short course of from one to two weeks is given by the most eminent clinicians. This intensive course occupies six hours a day (from 8 to 12 and from 4 to 6). To this course all graduate physicians, including those from foreign countries, are admitted on payment of a small fee. Furthermore—during the summer months—four-week courses on selected chapters of surgery, materia medica, medical chemistry, gynecology, otorhinolaryngology, dermatology and ophthalmology, especially adapted to foreign physicians, are given. Then, four times a year, field trips are organized, which afford foreigners an opportunity to become acquainted with the hospitals in Vienna and also with some of the adjacent resorts, such as Baden and Semmering. For physicians who can make a more protracted sojourn in Vienna (from two to six months), an opportunity is offered, in the clinics and hospitals, to take regular courses in almost every subject of medicine and to take temporary charge of a number of beds. For many, however, what they can see and learn in the laboratories and the institutes is of equal importance with the courses and the clinical experience. Undergraduates from eastern and southeastern Europe are subject to certain reservations, for the reason that the university facilities for this class of students are limited. The number of cadavers for anatomic dissection is not large, so that the first-year medical students have scarcely enough material for dissection. Foreigners are therefore not admitted to the beginning classes in medicine until all Austrian students are provided for. But these restrictions do not affect the graduate courses. A special committee on studies (*Studienkomite*) has been appointed to aid graduate students in the selection of courses.

Death of Dr. Josef Breuer

Dr. Josef Breuer of Vienna, one of the most eminent physicians of all times, has died at the age of 83. He combined, to a very rare degree, breadth of knowledge with zeal and acumen. He sprang from the same epoch that produced Skoda and Oppolzer, but, owing to differences in religious and political opinions, he was obliged to resign his position as the most prominent diagnostician in the Vienna clinic and to renounce his university career. In view of his extensive private practice, he found it difficult to keep up his scientific researches, but he did so even until the very end, although it cost him many severe struggles. We are indebted to his researches on the semicircular canals in the domestic pigeon for an explanation of the sixth, or static, sense. To him are

due also the first stimulative suggestions with reference to psychotherapy, which has undergone such a brilliant development at the hand of Freud. He has given us also a number of excellent treatises on subjects pertaining to diverse fields of medicine. At the bedside of his patients, he was not only an indefatigable counselor and a profound diagnostician but he was also remarkably successful in the treatment of their ailments.

Dr. Helly's Resignation from the Ministry of Public Health

Dr. Karl Helly has resigned as director of the bureau of public health and has retired from active practice, Dr. T. Scherrer having been appointed to succeed him. Dr. Helly was known not so much as a scholar and investigator as he was as a practitioner with an unusual talent for organization. His services have been especially meritorious in developing the public health service, the securing of an adequate and satisfactory supply of drinking water, equipping the vaccination institutes, and in centralized management of the sanitary service. Although primarily a state official, he has always shown a friendly consideration for the interests of the medical profession as a whole, so that his voluntary retirement, after he reached the age of 70, is regretted by his friends and associates.

BERLIN

(From Our Regular Correspondent)

June 27, 1925.

The Biologic Importance of Small Amounts of Inorganic Elements

Professor Spiro of Basel was invited to deliver the Leyden lecture, founded a number of years ago at the suggestion of Professor Schwalbe in memory of Professor Leyden, and he gave an interesting address on the biologic significance of small amounts of inorganic elements in the organism.

For much of the progress in this field we are indebted to the Americans, especially for the feeding experiments with synthetic foodstuffs. Our knowledge of the deposits in various parts of the body is slight. It is also difficult to keep out impurities in the synthetic experiments; nor is too high a degree of chemical purity of foods always an advantage. Pure sugar lacks many useful ingredients present in syrup. In other fields as well, cultural developments give rise to many peculiar observations. It would not be difficult for capitalism to secure a monopoly of mercury and other rare substances. We hear that in America it has been discovered that the addition of tetra-ethyl lead to gasoline makes it go further when used in automobiles. But, at the same time, a fine lead spray is thrown out into the air. It has been figured out in Zurich, Switzerland, that the general use there of gasoline containing tetra-ethyl lead would yield a deposit of 10,000 kilograms of lead a year. Incidentally, it may be stated that the manufacture of this substance has increased the price of bromin fourfold.

Copper, the use of which in preserves is prohibited in Germany on account of its toxicity, is found in the blood of some Coelenterata. In America, investigators have found in human milk a considerable quantity of copper, which is probably an effect peculiar to the character of the civilization, since copper is found in many fertilizers used in the United States. Metallic copper is easily dissolved in most fluids in the presence of oxygen, and combines then just as easily with albumin. This will explain the observation made during the war that in penetrating gunshot wounds the tissues surrounding a copper projectile remain free from bacteria. It is well known that silver kills gonococci and that gold destroys tubercle bacilli; the causes of this action need to be investigated further. Midway between barium and calcium (which occurs in considerable quantities in the body and is also the base of many remedies) we find strontium.

Zinc belongs to the same series; Professor Rost of the federal health service has established that 1.3 mg. is contained in a liter of milk. Apparently zinc exerts some influence on normal growth. It is found especially in the prostate, in the male germ cell and in the placenta; occasionally in malignant tumors. When zinc was added to the feed of animals which was free from vitamins it had a favorable effect. Possibly we shall discover that the so-called vitamins are chemically much simpler substances than we have assumed.

Silicon also plays an important rôle. When the chemist finds it present, he fears a contamination, since dust consists mainly of silicon. But it occurs in the living organism. Although in sea water it is found only in a dilution of 1:200,000 up to 1:500,000, many diatoms contain as much as 80 per cent. silicon. It is found also in hair, feathers, and in the pancreas. In tuberculous persons one finds in the ashes of the pancreas scarcely half and in cancer patients a great excess of the normal content in silicon.

The toxic effect of lead is well known. It appears that lead in the organism attacks mainly the lipoids. How does it come, however, that some persons are so much more susceptible to lead poisoning than others? There appears to be an internal and an external cause. Spiro has shown that considerable quantities of epinephrin favor the migration of lead into the vessel walls. He has also shown that the ingestion of alcohol has the same effect and that alcohol and epinephrin are coadjuvants.

The toxicity of arsenic is well known; also that persons can accustom themselves to large quantities. This is due to the fact that the intestine absorbs only a certain quantity of arsenic. If the excess of arsenic is injected into the blood stream, the metal is normally toxic even in so-called "arsenic eaters." It has also been established that arsenic occurs normally in small quantities in the body.

Researches have brought also new knowledge of sulphur. Water containing sulphur has an effect on the mineral metabolism of the body.

In the interior of a country and in sweet waters the quantity of iodin that occurs is very slight. In the sea water it its greater; the most iodin is found in bathing sponges. When there is more iodin in the soil, more enters into the composition of plants and thence is transferred to herbivorous animals. In a certain region in Switzerland with a 10 per cent. incidence of goiter, 276 units of iodin were found in a liter of milk; in another region with a 60 per cent. incidence of goiter, only 73 units.

In projected photographs, Spiro showed the importance of the inorganic substances in the body. Microscopic preparations of great delicacy were heated to over 500 C. so that all the protein and all the organic substances were destroyed. Only the inorganic structure was left. But one could easily tell from the appearance of the preparations whether it was a specimen of the liver, the kidney, the blood vessels, etc. It is apparent, therefore, that, in the last analysis, the inorganic substances are of paramount importance for the delicate structure of the organs.

University Study in Germany

After the close of the war, there was a greatly increased attendance at all the higher institutions of learning. The increase was most marked in the agricultural colleges but was observable also in the technical and commercial schools. The result has been an overcrowding or at least an ample filling of all the professions presupposing academic study and preparation.

The number of university students, which before the war had ranged around 60,000, shot up to 90,000 but has now

fallen to 68,827. There are 7,474 women students and 12,000 foreigners (including students of German extraction) among the number. The technical schools, which before the war had an attendance of 12,000, and for the winter semester 1923-1924 of 27,000, have now 23,507 students enrolled, 400 of whom are women.

There are 2,048 students of evangelical or Protestant theology (in 1914, 4,370); 1,755 students of Catholic theology (2,050); 17,769 students of law (9,840); medicine, 9,263 (16,048); dentistry, 1,275 (976); philosophy and philology, 9,911 (14,000); mathematics and natural sciences, 8,127 (8,132); pharmacy, 1,553 (1,100); political economy and political sciences, 16,230 (3,836); forestry, 456 (200).

The fact that the medical profession is overcrowded will account in part for the marked decrease in the number of medical students, but the professional outlook for lawyers and jurists will not justify the large number of students of law. The fourfold increase in the number of students of political economy is so great that the profession threatens to be flooded.

The technical schools show the following distribution of students: architecture, 1,412 (as compared with 2,193 in the summer semester of 1914); construction engineers, 2,385 (as against 2,767); mechanicians and engine builders, 7,463 (3,118); electrotechnology, 4,945 (1,307); mathematics and natural sciences, 3,380 (1,544); mining and foundry, 1,129 (576); shipbuilding, 270 (234); general culture subjects, 2,328 (493).

Since the war, the relative attendance at the various universities has undergone considerable change, which is due, in part, to the founding of three new universities in Frankfort-on-the-Main, Cologne and Hamburg, respectively, and, in part, to the loss of Strasbourg. In spite of these new universities, Breslau, Münster and Würzburg show a considerable increase in attendance, though the universities of Bonn, Göttingen, Greifswald, Halle, Freiburg, Heidelberg and Leipzig, and, more particularly, Kiel and Marburg, have a smaller attendance than before the war. The attendance at the newly founded University of Cologne is unusually large, 4,161 students having been enrolled for the summer semester 1924, which gives it fourth place among German universities, whereas the universities of Frankfort-on-the-Main and Hamburg, which were founded about the same time, had registered, for the summer semester 1924, only 2,683 and 2,422 students, respectively.

Vital Statistics for Bavaria

The birth rate for Bavaria has been on the decline since 1919. So far, the decrease in the birth rate has been compensated for by the reduction in mortality, with the result that an excess of births over deaths has always been attained. But the limits of such compensation have about been reached. In many rural sections, the number of infant deaths is equal to half of the total deaths, which shows that living conditions as affecting infants are worse in rural regions, on the average, than in the cities. Mortality from tuberculosis shows a reduction, as compared with former years, but the number of new cases of tuberculosis is still very high. For the systematic crusade against tuberculosis, special leagues have been formed, in the activities of which the municipalities, the provincial insurance bureau (*Landesversicherungsanstalt*), and the local and industrial *Krankenkassen* participate. Syphilis appears to be decreasing, possibly as a result of the newly established consultation centers and the educational propaganda. In 1924, there was a marked increase in acute and chronic alcoholism. In the rural districts, artificially induced abortions have been widespread. Of the infectious diseases, not only influenza but also typhoid have been prevalent in epidemic form in some sections.

Marriages

GROVER CLEVELAND WILSON, Lieut. Commander, U. S. Navy, to Miss Eleanor Adelle Freeman of Plattsburg, N. Y., June 23.

MORGAN GILMORE CARPENTER, Elgin, Ill., to Miss Martha Elizabeth Kelley of Marengo, June 22.

ROBERT E. JAMESON to Miss Lucille Howorth, both of Davenport, Iowa, June 30, at Denver.

CLARENCE PRENTICE MAY, New Orleans, to Miss Millicent Halsey of Germantown, Pa., June 25.

CLEVELAND JAMES WHITE, Philadelphia, to Miss Mildred M. Daly of Lincoln, Neb., June 6.

THERON G. YEOMANS, St. Joseph, Mich., to Miss Sadie L. Russell of Wren, Ohio, June 27.

JASPER MEILE MOLSBERRY, Plymouth, Iowa, to Miss Marian Pfeiffer of Burlington, June 10.

CHAUNCEY D. BEEBE, Sparta, Wis., to Miss Esther Putnam of Fort Atkinson, June 5.

REUBEN M. DICKER, Brooklyn, to Miss Mildred Burger of Rockaway Park, June 28.

EMANUEL I. DIAMOND, New York, to Miss Dora Deutsch of Brooklyn, June 30.

Deaths

Lesley Hinckley Spooner ✠ Boston; Medical School of Harvard University, Boston, 1907; instructor of bacteriology, Harvard University Graduate School of Medicine; formerly on the staff of the Massachusetts General Hospital and St. Luke's Home for Convalescents; member of the American Association of Pathologists and Bacteriologists; and the Society of American Bacteriologists; aged 43; died, June 28, at the Brooks Hospital, Brookline.

Charles Elihu Hackley, Scranton, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1860; formerly clinical professor of diseases of the eye and ear, Woman's Medical College of the New York Infirmary for Women and Children; for ten years on the staff of the New York Eye and Ear Infirmary; Civil War veteran; aged 89; died, June 15.

Delamar Turner, Jr., Savannah, Ga.; University of Georgia Medical Department, Augusta, 1912; member of the Medical Association of Georgia; veteran of the Spanish-American and World wars; past president and at one time secretary of the Baldwin County Medical Society; formerly county physician; aged 47; died, June 23.

George Beard Roberson, Greensboro, N. C.; Medical College of the State of South Carolina, Charleston, S. C., 1915; member of the Medical Society of the State of North Carolina; served in the M. C., U. S. Army, during the World War; aged 45; died, June 24, of cerebral hemorrhage.

Frederick C. Lehman, Philadelphia; Temple University Department of Medicine, Philadelphia, 1904; member of the Medical Society of the State of Pennsylvania; aged 62; died, June 26, at the Lankenau Hospital, as the result of a diverticulum of the esophagus.

Harry Daigh Carley ✠ St. Louis; Barnes Medical College, St. Louis, 1902; formerly professor of hygiene and sanitary science at his alma mater; served in the M. C., U. S. Army, during the World War; aged 52; died, June 21, at the Missouri Baptist Sanitarium.

Robert Blee Smith ✠ Columbus, Ohio; Starling Medical College, Columbus, 1901; veteran of the Spanish-American War; on the staffs of St. Anthony's and Grant hospitals, and Franklin County Sanatorium; aged 43; died, June 14, of epidemic encephalitis.

Collins T. Bedford, Indianapolis; Physio-Medical College of Indiana, Indianapolis, 1875; formerly professor of theory and practice and clinical medicine at his alma mater; Civil War veteran; aged 84; died, June 18, following an operation.

Glenn Stewart Evans, Peoria, Ill.; Chicago College of Medicine and Surgery, 1913; member of the Illinois State Medical Society; served in the M. C., U. S. Army, in France, during the World War; aged 34; died suddenly, June 23.

James Franklin Hughes, Larned, Kan.; University Medical College of Kansas City, Mo., 1905; superintendent of

the Larned State Hospital; aged 54; died, June 15, at Rochester, Minn., following a long illness.

James McElroy Guthrie ✠ Meridian, Miss.; Memphis Hospital Medical College, 1909; member of the American Academy of Ophthalmology and Oto-Laryngology; aged 47; died, June 16, at a local hospital, of heart disease.

Nelson Rinedollar, Mount Carroll, Ill.; Chicago Medical College, 1869; member of the Illinois State Medical Society; Civil War veteran; formerly health officer of Mount Carroll; aged 86; died, June 30, of heart disease.

Robert M. Murphy, Elkhart, Ind.; Ensworth Medical College, St. Joseph, Mo., 1889; Jefferson Medical College, Philadelphia, 1892; member of the Indiana State Medical Association; aged 65; died, May 16.

Jonathan Joseph Peters, Winnfield, La.; Memphis (Tenn.) Hospital Medical College, 1892; for twenty-five years coroner of Winn Parish; aged 72; died suddenly, June 29, of cerebral embolism.

David Q. Storie, Jr., Chariton, Iowa; Rush Medical College, Chicago, 1901; member of the Iowa State Medical Society; aged 50; was instantly killed, June 21, in an automobile accident.

Frank B. von Eisen Bockius, Berkeley, Calif.; Chicago Medical College, 1872; formerly a practitioner in Chicago; Civil War veteran; aged 78; died, June 23, of disseminated sclerosis.

Nicholas Robert Dann ✠ New York; Medical Department of Columbia College, New York, 1894; on the staff of the New York Eye and Ear Infirmary; died, June 21, of heart disease.

Burt George Bissell, Chicago; University of Illinois College of Medicine, Chicago, 1907; formerly on the staff of the Cook County Hospital; aged 55; died, June 12, of pericarditis.

Percy W. Johns, Hot Springs National Park, Ark.; Medical Department University of Louisiana, New Orleans, 1878; aged 70; died, June 23, at the Trinity Hospital, Little Rock.

Charles Herbert Young, Reily, Ohio; Cleveland University of Medicine and Surgery, 1895; aged 53; died in April, at the Mercy Hospital, Hamilton, of cirrhosis of the liver.

Robert F. Tarr, Kittanning, Pa.; Maryland Medical College, Baltimore, 1900; member of the Medical Society of the State of Pennsylvania; aged 64; died, June 17, of uremia.

John S. Shirley, Clarion, Pa.; College of Physicians and Surgeons, Baltimore, 1883; also a lawyer; aged 68; died, June 15, at St. Francis Hospital, Pittsburgh, of nephritis.

Paul Gauthier, Montreal, Que., Canada; University of Montreal Medical Faculty, 1924; on the staff of St. Paul's Hospital, where he died recently, of diphtheria, aged 26.

James Reed Lytle, Tillamook, Ore.; Rush Medical College, Chicago, 1884; member of the Ohio State Medical Association; aged 74; died suddenly, June 15, of myocarditis.

Malcolm Graham Robinson, Wytheville, Va.; Medical College of Virginia, Richmond, 1897; member of the Medical Society of Virginia; aged 54; died, June 25.

Mark Zopfie, Stonington, Colo.; Cleveland University of Medicine and Surgery, 1897; aged 68; died recently, of injuries received in an automobile accident.

Edwin J. Gause, Unity, Ill.; Central College of Physicians and Surgeons, Indianapolis, 1882; aged 67; died, July 6, at Cairo, of a self-inflicted bullet wound.

Thomas Watts Byerly, Laurel, Md.; Hahnemann Medical College and Hospital of Philadelphia, 1893; formerly mayor of Laurel; aged 57; died, June 15.

William Knight, Clinton, N. J.; University of Pennsylvania School of Medicine, Philadelphia, 1871; aged 78; died, June 12, of cerebral hemorrhage.

DeForest A. Bronson ✠ North Fond Du Lac, Wis.; Chicago College of Medicine and Surgery, 1910; aged 47; died suddenly, June 15, of heart disease.

Walter B. Knight, Cincinnati; Pulte Medical College, Cincinnati, 1888; aged 57; died of skull fracture received when attacked by a robber, June 29.

McDonald Watkins ✠ Natchez, Miss.; Medical Department of the Tulane University of Louisiana, New Orleans, 1900; aged 51; died, June 19.

Vernon Dayton Holbrook, Peoria, Ill.; Baltimore Medical College, 1902; aged 49; died, April 17, of streptococcus sore throat and bronchopneumonia.

Frank Kendall Perkins, Hempstead, N. Y.; Medical Department of the University of the City of New York, 1884; aged 67; died, June 23.

George Frederick Jones, Webbwood, Ont., Canada; University of Toronto Faculty of Medicine, 1888; died, March 28, of cerebral hemorrhage.

Joseph Riley Buffington, Nelson, Neb.; College of Physicians and Surgeons, Keokuk, Iowa, 1875; Civil War veteran; aged 85; died, June 22.

William H. Rand, Washington, D. C.; Yale University School of Medicine, New Haven, 1877; Civil War veteran; aged 79; died, June 21.

William M. Bailey, Bowling Green, Ky.; Medical Department, University of Nashville, Tenn., 1871; aged 90; died, May 23, of senility.

Duncan Orestes Alguire, Cornwall, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1873; aged 71; died, May 4.

John Lee Elder, Dallas, Texas; University of Louisville (Ky.) School of Medicine, 1898; aged 58; died, June 22, at Oakland, Calif.

Osbourne Foster Chadbourne, Syracuse, N. Y.; University of Michigan Medical School, Ann Arbor, 1883; aged 70; died, June 26.

Finis Ewing Jeffery, Desha, Ark.; University of Louisville (Ky.) School of Medicine, 1879; aged 69; died, June 18, of heart disease.

Paul Leo Hefty ✠ New Glarus, Wis.; Rush Medical College, Chicago, 1921; aged 33; died suddenly, June 15, of heart disease.

John Henderson Wright, Alexis Creek, B. C.; University of Edinburgh, Scotland, 1876; aged 73; died, June 1, at Vancouver.

Harry Young Messec, Narberth, Pa.; Ohio Medical University, Columbia, 1898; aged 52; died, June 23, of heart disease.

Ida M. Sanborn, Chicago; Bennett College of Eclectic Medicine and Surgery, 1898; aged 57; died, July 3, of heart disease.

Samuel O. Rawlings, New Harmony, Ind.; Cincinnati College of Medicine and Surgery, 1873; aged 79; died, June 14.

James Robert Batson, Cynthiana, Ky.; Medical College of Ohio, Cincinnati, 1879; aged 69; died, June 21, of neuritis.

Charles Augustine Covell ✠ Syracuse, N. Y.; Syracuse University College of Medicine, 1894; aged 58; died, May 21.

Charles H. Pulford, Seymour, Conn.; Hahnemann Medical College and Hospital, Chicago, 1888; aged 65; died, June 12.

George Granville Graessle ✠ Seymour, Ind.; Vanderbilt University Medical Department, 1888; aged 59; died, June 13.

Douglas D. Weems, Greeneville, Tenn.; Louisville (Ky.) Medical College, 1891; aged 60; died, May 26, of anemia.

Jerome B. Lyon, Logan, Ohio; Medical College of Ohio, Cincinnati, 1880; aged 72; died, May 17, of pneumonia.

Moffitt Forster, Toronto, Ont., Canada; Victoria University Medical Department, 1865; aged 84; died, May 5.

Robert Lee Ford, Livermore, Ky.; Barnes Medical College, St. Louis, 1899; aged 62; died, June 16, of erysipelas.

James Edward Galvin, Ludlow, Vt.; Baltimore University School of Medicine, 1895; aged 54; died, June 9.

John F. O'Keefe, Mount Clemens, Mich.; Rush Medical College, Chicago, 1879; aged 67; died, June 26.

David Alexander Drennan, Springfield, Ill.; Rush Medical College, Chicago, 1875; aged 74; died, June 26.

Hamilton Williams, New York; Royal College of Physicians, Ireland, 1875; died, in June, aged 85.

August Muehlenpfordt, Ashkum, Ill. (licensed, Illinois, 1877); aged 86; died suddenly, June 12.

Heber Arden Ward, Denver; Maryland Medical College, Baltimore, 1899; aged 49; died, June 13.

Emil C. Becker ✠ Deerfield, Ill.; Rush Medical College, Chicago, 1897; aged 63; died, July 6.

Oliver James, Cory, Ind.; Indiana Medical College, Indianapolis, 1877; aged 84; died, June 12.

David A. Dyer, St. Louis; Missouri Medical College, St. Louis, 1881; aged 68; died, June 13.

Melvin Preble, Portland, Me.; Medical School of Maine, Portland, 1866; died, June 19.

The Propaganda for Reform

In This Department Appear Reports of The Journal's Bureau of Investigation, of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other General Material of an Informative Nature

MIZAR

Mr. Sorokowski's Red Pepper Cure for Rheumatism

J. Sorokowski, who used to do business from 2424 West Superior Street, Chicago, but is now, apparently, operating from a west side suburb, Oak Park, sells (especially to the foreign element) a product that he calls "Mizar" as "the most effective remedy for rheumatism." Mizar comes in the form of an ointment, scented with bergamot and lemon. The instructions are to rub it on the parts affected and then bandage and keep the parts warm. Sorokowski states that on the second or third day an eruption will appear with itching. "Such eruption," says Sorokowski, "proves that the cause of ailment moves to the surface of the body—you will experience some swelling and redness, but don't get alarmed for that's the way Mizar is doing his work."

Some months ago a physician who does work in the dermatologic department of one of the free dispensaries in Chicago wrote in part as follows:

"About the middle of last winter a middle aged man came in with a severe dermatitis of one arm and leg. The patient had been using Mizar salve for rheumatism and wherever he had applied the salve, and only on these places, he had developed an acute severe dermatitis.

"Last Wednesday another Polish patient, an adult man, came into the clinic with the following history: A friend recommended 10 days before that he try Mizar salve for his rheumatism which he did. The next day he stated that his legs became fiery red. He was obliged to go to the Cook County Hospital for a week. When seen in the clinic ten days after the one and only application of this salve he still had an acute dermatitis of both legs with some involvement of the scrotum and patchy areas on the hands and face.

"Briefly, here are two cases of dermatitis venenata from a salve called Mizar. Enclosed is the literature that accompanies a jar of this salve. The picture, name and address all appear on the jar. The salve is put up in a jar with a metal top (similar to commercial cold cream jar). It holds about two ounces or perhaps a little more. The retail price is $4.25 a jar which is what each of the two patients paid."

More recently we received a letter from a physician in Detroit, accompanied by a jar of Mizar. This physician wrote in part as follows:

"Mizar is being sold here in Detroit among foreigners, for rheumatism, gastric ulcer, hernia and everything. The price charged is $4.25. I had a patient under my treatment with a peculiar rash from this salve—this prompted me to write to you."

A jar of Mizar was obtained, and the A. M. A. Chemical Laboratory was asked to determine the irritating substance responsible for the cases reported. The laboratory report follows:

LABORATORY REPORT

"One original package of Mizar (Joseph Sorokowski, Chicago) was submitted to the A. M. A. Chemical Laboratory for examination. The jar contained about 2 ounces (60 gm.), of a soft ointment having a pale, cream-yellow color and an odor suggestive of a mixture of bergamot and lemon oils. The taste was exceedingly pungent, thus suggesting the presence of capsicum extractives.

"Qualitative tests indicated the absence of alkaloids, sodium borate (borax), and compounds of the heavy metals, such as lead, mercury, antimony, arsenic and bismuth; barium and calcium compounds were not found. Tests for volatile oil of mustard and for cantharides and ginger were negative. Soap, a saponifiable fat, petrolatum and considerable amounts of extractives from capsicum were present. Organoleptic tests indicated that the preparation contained capscium extractives equivalent to about 1 gm. of oleoresin of capsicum in 100 gm. of material. The amount of ash was 2.2 per cent. The total solids amounted to 77 per cent., about one half of which was petrolatum and the remainder consisted of soap and fat.

"Mizar may be considered essentially an ointment, the chief active ingredient of which is an extract from capsicum. The ointment base is evidently a mixture of soap, petrolatum, a saponifiable fat and water."

Presumably a product of this sort appeals to those purchasers of "patent medicine" who feel that they are not getting their money's worth unless the preparation has an appalling smell or taste or will produce some physiologic reaction that will make them sit up and take notice.

Correspondence

ETHICS AND THE DENTAL PROFESSION

To the Editor:—As your circulation manager can tell you, I have been taking The Journal for several years. It is an important addition to my professional education, and I always read it through, which is more than I can say for some of the journals of my own profession that come to my table.

I want to express my appreciation of all that you publish, but in particular of the department of "Propaganda for Reform," and especially to mention the recent article on the "Whole Wheat" concern and the Defensive Diet League. Nothing could be truer, and more fair, in my opinion, than the way you handled the case of the Defensive Diet League. I happened to be one of those who were taken in for $10 when the league was being given birth. The purposes seemed plausible and meritorious, and were, apparently, sponsored by my state society. However, it did not take me long to discover the unreliability and preposterousness of much that it stood for.

At the annual meeting of the American Society of Orthodontists, held in Kansas City last year, the whole question of unrestricted advertising in dental journals and uncensored exhibits or clinics at our meetings was discussed, and a movement for reform was set on foot. Since then I have on several occasions brought these matters to the attention of dental societies and publications, but my efforts have met with little or no progress. I am still interested, however, and I wish to obtain reprints of the articles in The Journal to which I have referred for use in further efforts to effect improvement.

In the meantime I trust that you will remember that if the dental profession has not yet adopted your high ideals it is because we are not as old a profession as medicine, and therefore have not arrived at the same point.

L. H. Wirt, D.D.S., South Bend, Ind.

"YEAST IN THE TREATMENT OF PELLAGRA"

To the Editor:—In an abstract with this title (The Journal, June 20, p. 1947), you emphasize Goldberger's work. It is indeed difficult to understand why you should regard Goldberger's efforts to evade the vitamin theory as to the causation of pellagra advanced by Funk as worthy of comment, and ignore efforts to substantiate Funk's theories.

At first, Goldberger advanced the theory that the absence of amino-acids in diet was the causative factor. Since the publication of my article in the *Medical Record*, he has stated that the factor is one which he designates as P-P, which is derived from brewers' yeast and administered in tomato juice or milk. You are, of course, aware of the fact that brewers'

yeast, milk and tomato juice furnish one of the greatest sources for vitamin B.

It is particularly significant that the protein diet heretofore recommended by Goldberger had to be abandoned subsequently or else augmented with a diet rich in vitamin B in order to effect a cure of pellagra. And now he is trying to claim that this high vitamin diet contains a hitherto unknown factor P-P.

I did not attempt to ignore or evade any one's hypotheses nor did I call another's theory by some other name and claim it as my own. It is my opinion that, according to the rules of fair play, my article deserves the same comment as does Goldberger's P-P.

N. M. OWENSBY, M.D., Atlanta, Ga.

[COMMENT.—THE JOURNAL has no desire to fail to give credit where due in connection with the progress of medical investigation. Pellagra, like a number of other diseases, has been the subject of vigorous debates and frequent changes of opinion with respect to its etiology. The hypotheses have included theories incriminating some toxin in spoiled food, notably maize; some microbiotic agent as the noxious factor, and dietary deficiencies of one sort or another. From time to time some of the proposed explanations have been reviewed in THE JOURNAL (Pellagra, editorial, May 29, 1920, p. 1520; The Pellagra Problem, Aug. 13, 1921, p. 560; The Conquest of Pellagra, Jan. 26, 1924, p. 305), especial effort being made on more than one occasion to impress our readers with the warning that the subject of the precise etiology of pellagra remains an open one; though latterly the claims for pathogenesis due to some deficiency in the diet have unquestionably merited the strongest emphasis, if not final approval.

The view that pellagra may be due to a shortage of certain vitamins in the food intake has, indeed, been vigorously presented in the past. In the latest edition of his book on vitamins, Funk (The Vitamines, translated by H. E. Dubin, Baltimore, Williams & Wilkins Company, 1922), whose views our correspondent champions, dismisses the etiology of pellagra with these words:

> We are inclined to the view of Goldberger, who considered the following etiological factors as possible:
>
> 1. Partial lack of vitamins.
> 2. Lack of animal protein.
> 3. Lack of a still unknown vitamin.
> 4. The combined influence of all these factors.
>
> We believe that the dilution of protein with carbohydrates increases the vitamin requirements, so that although the vitamins are present, they do not suffice. We have mentioned the possible significance of the important substance, associated with proteins, and it is not impossible that this factor is lost during the milling of corn. It would be rather premature to consider the chapter of pellagra as closed.

Our correspondent, writing two years later (Owensby, N. M.: Pellagra, *M. J. & Rec.* **120**:377 [Oct. 15] 1924), reported observations in twenty-eight cases of pellagra for which he states that "the only treatment consisted of the addition of tomato juice, raw cabbage, lettuce, and the water in which vegetables had been cooked (colloquially known as 'pot liquor'), to their daily diet and a recovery was recorded in each case. The time required for a complete abatement of all symptoms varied from three to sixteen weeks, depending on the advance of the disease. The slowest to recover presented a rather well marked psychomotor retardation, slight amnesia, and complained of intense headaches in addition to the more familiar symptoms of the disease. It was noted that each patient had previously subsisted on a vitamin free diet and had a marked aversion to the foods prescribed." This is without question an interesting statement; but in the absence of more detailed information it can scarcely be classed as a scientific report that could be subjected to adequate critical analysis, particularly with respect to details of the diet. The author concludes, however, that:

> It would appear that Funk was correct in his theory that pellagra is due to a deficiency of vitamins in the foods of those so affected. And since there is a complete subsidence of all symptoms of the disease when the patient is placed on a diet rich in water soluble vitamins, it would seem that the particular dietary factors constituting the specific pellagra producing fault is an inadequate supply of the antineuritic vitamin B, with the lack of the antiscorbutic vitamin C playing a contributory rôle.

With respect to the findings and claims of Goldberger and his associates of the U. S. Public Health Service, there appears to be a sequence of somewhat changing official statements. This, of itself, is no disparagement of research; for knowledge grows with experience, and our views often deserve to be recast in accord therewith. On the other hand, shifting views should serve to make us critical of any momentary pronouncement and keep us open minded toward the unstable decisions. In 1923 (Goldberger, Joseph; Waring, C. H., and Tanner, W. F.: Pellagra Prevention by Diet Among Institutional Inmates, *Pub. Health Rep.* **38**:2361 [Oct. 12] 1923) it was announced that "the idea that pellagra is a communicable disease receives no support from this study. Pellagra may be completely prevented by diet." In 1924, later conclusions read: "Fresh meat and milk contain the essential pellagra-preventive factor or factors. It is estimated that about 4 to 4½ ounces (125 gm.) of fresh beef (lean round steak) and not over about 40 fluidounces (1,200 gm.) of buttermilk will suffice to prevent pellagra in all but very exceptional instances. Fresh butter (from cows largely pasture fed) ingested daily in quantities averaging approximately 125 to 135 gm. (butter fat, 100 to 110 gm.) failed to prevent pellagra in several instances in which it was tried. Cod liver oil ingested daily in quantities averaging upward of 2 gm. per kilogram of body weight failed to prevent pellagra in several instances in which it was tried. The primary etiological dietary factor in pellagra is a faulty protein (amino-acid) mixture, a deficiency in some as yet unrecognized dietary complex (possibly a vitamin), or some combination of these" (Goldberger, Joseph; and Tanner, W. F.: A Study of the Treatment and Prevention of Pellagra, *Pub. Health Rep.* **39**:87 [Jan. 18] 1924). Thus the possible significance of fat-soluble vitamins seems to have been excluded.

Subsequently (Wheeler, G. A.: Pellagra in Relation to Milk Supply in the Household, *Pub. Health Rep.* **39**:2197 [Aug. 29] 1924) the importance of fresh meats and milk in the dietary was stressed. In 1925 a revised series of conclusions seemed to be warranted, as follows:

> A liberal supply of protein presumably of good biological quality does not completely prevent, though it may modify, the clinical picture of pellagra by notably delaying or preventing the development of the distinctive dermatitis. This modifying action may be of an indirect, sparing nature. In the prevention (and presumably causation) of pellagra there is concerned a heretofore unrecognized or unappreciated dietary factor which we designate as factor P-P. This may be effective with but little, possibly without any, cooperation from the protein factor. Factor P-P may possibly play the sole essential rôle in the prevention (and causation) of pellagra. Factor P-P is present in brewers' yeast, in milk and (on the basis of our experience with fresh meat) in lean beef; it is very low or lacking in dry soy beans, dry cow peas, butter, cod liver oil, and canned tomatoes (Goldberger, Joseph; and Tanner, W. F.: A Study of the Pellagra-Preventive Action of Dried Beans, Casein, Dried Milk and Brewers' Yeast, with a Consideration of the Essential Preventive Factors Involved, *Pub. Health Rep.* **40**: 54 [Jan. 9] 1925).

It is this statement that seems to have aroused some skepticism as to the possible rôle of a lack of the familiar vitamin B. A few months later, however, the beneficial effects of yeast or yeast concentrates was more specifically urged, with the reminder that "in all but the severe cases of pellagra careful feeding is all that is needed. In our judgment, it is only in cases of more than average severity, or where such foods as fresh milk and fresh meat cannot be procured, that yeast may serve a valuable purpose and may help to save life" (Goldberger, Joseph; Wheeler, G. A., and Tanner, W. F.: Yeast in the Treatment of Pellagra and Black Tongue, *Pub. Health Rep.* **40**:927 [May 8] 1925).

Goldberger and his associates state that they were led to test the action of yeast in pellagra by reason of some very favorable indications afforded by tests of this preparation in experimental black tongue in dogs. This is a disease showing, according to the government investigators (Wheeler, G. A.; Goldberger, Joseph; and Blackstock, M. R.: On the Probable Identity of the Chittenden-Underhill Pellagra-Like Syndrome in Dogs and "Black-Tongue," *Pub. Health Rep.* **37**:1063 [May 5] 1922) a striking similarity and probable identity with a pellagra-like syndrome experimentally produced in dogs by Chittenden and Underhill (Chittenden and Underhill: The Production in Dogs of a Pathological Condition Which

Closely Resembles Human Pellagra, *Am. J. Physiol.* **44**:13 [Aug. 1] 1917) and described by them in 1917. The investigation to this experimentally produced disease has been continued at Yale University by Underhill and Mendel (Underhill, F. P., and Mendel, L. B.: The Effective Agent in the Prevention or Alleviation of the Chittenden-Underhill Pellagra-Like Syndrome in Dogs, *Pub. Health Rep.* **40**:1087 [May 29] 1925), with the endeavor to discover a remedial agent. In their own words:

> Having established by actual trial a dietary adequate to mantain dogs, a single known deficiency has been created in an endeavor to determine the character of the protective substance. It may be stated at once that the syndrome is associated with a lack of some unknown constituent of butter fat. This substance will prevent the incidence of the disease in dogs, or, if the disease is once established, will either alleviate or cure it. The unknown substance present in butter is not identical with fat soluble A, since active cod liver oil fails to protect against the disease or to modify appreciably the syndrome once established. It is also quite clear that if this effective agent partakes of the nature of a vitamin, its function is quite different from functions of vitamins hitherto recognized. . . . Carrots, which may probably be considered as the best source of carotin, are particularly effective in alleviating the Chittenden and Underhill syndrome when it is once initiated. We have been so impressed with the efficacy of carrots as a curative agent that, particularly in view of the remedial potency of the yellow colored egg yolk and butter, we have adopted as a working hypothesis the possibility that the effective agent is either a natural pigmentary substance or some unidentified compound associated therewith.

Evidently the last word on this much debated subject has not yet been spoken.—ED.]

MEASLES AND DIPHTHERIA OCCURRING CONCURRENTLY

To the Editor:—Recently, attention has been called to carelessness on the part of some physicians in not examining patients thoroughly. The following two cases well illustrate need of a thorough examination even though the diagnosis seems absolutely certain from a casual inspection:

A boy, aged 9 years, was taken sick with sneezing, fever, watering of the eyes and a slight sore throat, January 21. The following day an eruption had appeared. A physician was called and diagnosed the case as measles. However, as the physician is a competent pediatrician, he examined farther and found an inflamed throat with a small patch on one tonsil. He diagnosed it as diphtheria and gave antitoxin. Cultures proved the correctness of his diagnosis. With the prompt administration of antitoxin the child made a nice recovery, even if two serious diseases were present at the same time.

A boy, aged 5 years, had an onset of sneezing, inflamed eyes and fever, June 20. A physician was called, June 22. The eruption was beginning but was indefinite. The physician made a thorough examination of the throat. Although no definite patch was present, he made a culture which proved positive for diphtheria bacilli. By the time the culture could be reported (the following day after it was taken) the clinical diagnosis of diphtheria was possible, and by that time the eruption of measles was definite. If the physician had not made a thorough examination and taken a culture, but had been satisfied with a diagnosis of measles only, an unnecessary death may have occurred. As it is, the boy is making a satisfactory recovery.

In communicable diseases it occasionally happens that two occur concurrently, and it is only by a careful examination that both can be recognized. Failure to recognize both may lead to the spread of one of them to other persons and also result in deaths due to failure to employ proper therapeutic measures. So we plead for thorough examinations in all cases. It is by careful attention we can continue to keep our standards above that of irregular practitioners.

J. L. POMEROY, M.D.,
J. W. ROBINSON, M.D., Los Angeles.
Health Officer and Deputy Health Officer,
Respectively, Los Angeles County.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

COLLOIDAL BENZOIN TEST

To the Editor:—In a recent copy of the *Archives of Neurology and Psychiatry* reference was made to the colloidal benzoin test, and I would appreciate it very much if you would kindly furnish me with the technic.

R. H. FOSTER, M.D., Pineville, Pa.

ANSWER.—The technic of the colloidal benzoin action in the cerebrospinal fluid is given by Hicks and Pearce (*Brit. M. J.*, Feb. 16, 1924):

1. The gum benzoin must be the Sumatra gum, obtained as the natural product in brown masses containing white or yellowish white lumps. One gram of the freshly powdered Sumatra resin is dissolved in 10 c.c. of absolute alcohol. This is well shaken and let stand for forty-eight hours. It is then decanted, and 0.3 c.c. of the clear fluid is slowly added to 20 c.c. of twice distilled water at 35 C. A homogeneous suspension is thus obtained. This suspension must always be freshly prepared for each batch of tests.

2. A 0.01 per cent. solution of chemically pure sodium chlorid is made in water twice distilled through a glass condenser.

3. For each fluid to be examined, a series of six or twelve test tubes is put up. Into the first tube, 0.25 c.c. of the saline solution (0.01 per cent.) is placed; into the remaining tubes, 1 c.c. Then 0.75 c.c. of the cerebrospinal fluid under examination is measured into the first tube, and 1 c.c. of the cerebrospinal fluid into the second tube; 1 c.c. from the second tube is put into the third tube and mixed thoroughly; 1 c.c. from Tube 3 is put into Tube 4, and so on till the penultimate tube is reached, when, after mixing, 1 c.c. is discarded. Thus the last tube contains only saline solution, which acts as the control tube. To each tube, including the control, 1 c.c. of gum benzoin suspension is added and mixed thoroughly. The mixture is allowed to stand on the laboratory bench about twelve hours before reading.

The reading of the tubes is simple, three degrees of precipitation being recognized, and these can be graphically represented by the numerals 0, 1 and 2. In the first of these (0) no change occurs, the fluid remaining as in the control tube without any precipitate. The next degree shows some precipitation, but the fluid still remains opaque; this is designated 1. In the third there is complete precipitation, the supernatant fluid being quite clear: this is called 2.

There are two types of readings which may be regarded as "negative" or "normal." One type shows no change whatever, reading as 0 in all five or eleven tubes; the other types give a precipitate in Tubes 7 to 9 inclusive. In these tubes the reading may be either 1 or 2.

ADMINISTRATION OF HEXAMETHYLENAMIN

To the Editor:—We have encountered some difference of opinion as to the method of administering hexamethylenamin. My practice has been to acidify the urine, when necessary, by administering acid sodium phosphate some hours before. A physician trained in England maintains that there is no reason why the two drugs should not be given together, and advances the following quotations to sustain his view:

Squire's Companion to the British pharmacopeia says: "The use of urotropin (together with acid sodium phosphate, which should always be given with it) as a prophylaxis . . ." And then in the pharmacopeias of the London hospitals, under the heading Mistura Hexamine, appear: "Hexamine 10 gr.; acid sodium phosphate, 30 gr.; chloroform water to 1 oz. University Hosp." The same prescription is listed by St. Thomas's and, with water to 1 oz., by the Royal Free Hospital. Charing Cross Hospital uses hexamine, 5 gr.; acid sodium phosphate, 10 gr.; tincture hyoscyamus, 10 min.; chloroform water to 1 ounce. Lock and Saint Mary's hospitals are also quoted as using mixtures containing hexamine and acid sodium phosphate.

In Frank Kidd's Common Infections of the Kidneys, I find, p. 67: ". . . and order a mixture containing acid sodium phosphate to be taken four times a day. Dissolve in each dose one or two 5 grain tabloids of hexamine. Hexamine supplied in a mixture does not keep, as it is decomposed by the acid." This view seems about middle ground between the hospital mixtures and what I believed to be the common American practice, as expressed in Bastedo's Materia Medica, etc., as follows: "If the urine is alkaline, it may be acidified by acid sodium phosphate, but this must not be given at the same time as the drug, as they are chemically incompatible."

The frequent use of this drug, and apparently its frequent misuse, leads me to ask for a statement as to the how and why of administration.

E. DARGAN SMITH, M.D., Wuchow, China.

ANSWER.—As is usually the case, under circumstances when reliable authorities seem to disagree, both are partly right and partly wrong. Bastedo's standpoint is theoretically correct. Acids do decompose hexamethylenamin; but the decomposition is not sufficiently extensive and rapid in extemporaneous mixtures as those employed by the British as to constitute a serious incompatibility. In a solution containing hexamethylenamin, 3 gm., acid sodium phosphate, 9 gm., in distilled water, 120 c.c., a faint reaction for free formaldehyd is obtainable immediately after mixing, though the reaction is much less intense than that obtained in a solution of the same amount of hexamethylenamin in 0.2 per cent. hydrochloric acid. This can be readily understood when we compare the hydrogen ion concentration of the two solutions, which with the acid sodium phosphate mixture, is p_H 5.6, while the hydrochloric acid mixture is more acid than p_H 3. In the course of days, when kept at ordinary room temperature and in diffused light, the formaldehyd reaction in the solutions increases, and the odor and the acrid taste of formaldehyd become perceptible, so that, in course of time, the solution would become unfit for use. When recently prepared, the acid sodium phosphate-hexamethylenamin mixture is not objectionable, as it contains considerably less free acid and therefore free formaldehyd than would be liberated in the stomach with its higher p_H content. In view of the comparative instability of the mixture, it would seem advisable either, as Useful Drugs recommends, to administer acid sodium phosphate midway between doses of hexamethylenamin, or, as elsewhere suggested to add the hemamethylenamin to a solution of acid sodium phosphate just before administration. In any instance it must be borne in mind that the urine must not be just acid, but markedly acid in order to permit sufficient liberation of formaldehyd by hydrolysis.

ANTIVENOM OUTFIT

To the Editor:—I am enclosing an advertisement of the Monarch Drug Company of San Diego, Calif., describing their antivenom outfit for the treatment of snake bite. I wish to secure your opinion as to its effectiveness, before placing dependence on it in such a grave emergency as that for which it is used.

G. R. STEVENSON, Indianapolis.

ANSWER.—The Monarch Drug Company's antivenom outfit is said to consist of potassium permanganate tablets, sterile water for making a solution, a hypodermic syringe and needle for injecting, caffein tablets to be used as a heart stimulant, and a tourniquet with directions for using.

Sollmann and Cushny, in their textbooks on pharmacology, state that potassium permanganate is used in snake-bite both for washing the wound and for injection. They warn, however, that it is effective against the poison only if used a few minutes after the bite. The use, therefore, of potassium permanganate appears to be rational if it can be applied promptly.

The treatment of snake-bite was discussed in THE JOURNAL, July 4, 1925, page 57.

BORAGE TEA

To the Editor:—Have you ever heard of such a thing as "borage tea"? My brother-in-law, who is out in Albuquerque taking a "cure," asked me about it. Some friend wrote and told him it would cure his throat, and I should like to tell him just what it is. Please let me have any information you can about it.

B. C. W., Chicago.

ANSWER.—Borage tea is a decoction prepared from *Borago*. The following description of *Borago* is taken from the Dispensatory:

BORAGO. *Borago officinalis*, L. *Borage. Bourrache*, Fr. *Borasch, Boretsch*, G. (Fam. *Boraginaceae.*)—This European annual abounds in mucilage, and the stems and leaves contain potassium nitrate with other salts. To these constituents the plant owes its feeble medicinal properties. An infusion of the leaves and flowers is employed as a demulcent, refrigerant, and gently diaphoretic drink. The expressed juice of the stems and leaves is also given in the *dose* of from two to four fluidounces (60-120 mils).

The substance acts as an emulsion just as many other such mucilaginous substances do. It is not official in the U. S. Pharmacopeia or the National Formulary; it has no standing as a medicine.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 1. Sec., Dr. Harry C. De Vighne, Juneau.
PHILIPPINE ISLANDS: Manila, Aug. 11. Sec., Dr. Jose V. Gloria, 686 Rizal Ave., Manila.
PORTO RICO: San Juan, Sept. 1. Sec., Dr. Diego A. Biascoschea, 3 Allen St., San Juan.
SOUTH DAKOTA: Deadwood, July 21. Dir., Dr. H. R. Kenaston, Homestead.

Delaware June Examination

Dr. H. W. Briggs, secretary, Medical Council of Delaware, reports the written and practical examination held at Wilmington, June 16-18, 1925. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 6 candidates examined, 4 passed and 2, including 1 osteopath, failed. Four candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Washington University		(1923)	85.7
Jefferson Medical College of Philadelphia		(1924)	82.2, 87.1
University of Berlin, Germany		(1910)	83.2

College	FAILED	Year Grad.	Per Cent.
Temple University		(1920)	74.8
Osteopath			69.3

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Boston University School of Medicine		(1924)	Maine
University of Vermont		(1922)	W. Virginia
Medical College of Virginia	(1915) West Virginia,	(1924)	Virginia

Massachusetts May Examination

Dr. Charles E. Prior, secretary, Massachusetts Board of Registration in Medicine, reports the oral, written and practical examination held at Boston, May 12-14, 1925. The examination covered 17 subjects and included 170 questions. An average of 75 per cent. was required to pass. Of the 33 candidates who took the physicians' and surgeons' examination, 12, including 1 osteopath, passed and 21, including 2 osteopaths, failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Stanford University School of Medicine		(1922)	82.4
Johns Hopkins University		(1921)	87.1
Harvard University		(1921)	85.3
Middlesex Coll. of Medicine and Surgery	(1921) 79.5,	(1923)	77.2
Tufts College Medical School	(1922) 80.8,	(1924)	82.0
University of Michigan Medical School		(1916)	75.0
St. Louis College of Physicians and Surgeons		(1924)	76.2
University of Vermont		(1924)	82.6
University of Toronto		(1921)	76.5
Osteopath			75.0

College	FAILED	Year Grad.	Per Cent.
Maryland Medical College		(1913)	60.7
Middlesex College of Medicine and Surgery		(1923, 3)	57.9, 59.3, 70.4, (1924) 69.7, (1925) 59.5
Kansas City College of Medicine and Surgery		(1922)	28.2
St. Louis College of Physicians and Surgeons		(1921)	70.5, (1922, 3) 55.9, 60.3, 71.2, (1923, 3) 63.1, 70.0, 72.8, (1924, 2) 73.1, 73.4
National University, Athens, Greece		(1923)*	41.0
University of Catania, Italy		(1917)*	51.3
University of Naples, Italy		(1914)*	69.7
Osteopaths			64.8, 67.0

* Graduation not verified by the American Medical Association.

Minnesota April Examination

Dr. Thomas S. McDavitt, secretary, Minneosta Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, April 7-9, 1925. The examination covered 15 subjects and included 80 questions. An average of 75 per cent. was required to pass. Eleven candidates were examined, all of whom passed. Sixteen candidates were licensed by reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University		(1924)*	87.1
Rush Medical College		(1924)*	87.6
Johns Hopkins University		(1923)	85.9

University of Minnesota Medical School	(1924, 2)†	87.7, 89.7, (1925, 4)† 81.8, 86.7, 88.6, 90.0
St. Louis University	(1924)	81.8
University of Buffalo	(1923)	88.8

College	*LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of California		(1916)	California
Rush Medical College		(1922), (1924, 2)	Illinois
College of Physicians and Surgeons, Chicago		(1906)	S. Dakota
State University of Iowa		(1898), (1910), (1923)	Iowa
Johns Hopkins University		(1920)	North Carolina, (1923) Maryland
Harvard University		(1922)	Illinois
University of Michigan Medical School		(1920), (1923)	Michigan
St. Louis University		(1920)	Illinois
Woman's Medical College of Pennsylvania		(1921)	Virginia
Milwaukee Medical College		(1910)	Wisconsin

* This candidate has completed his medical course and will receive his M.D. degree on completion of a year's internship in a hospital.

† This candidate has completed his medical course and received an M.B. degree, and will receive his M.D. degree on completion of a year's internship in a hospital.

Book Notices

PRACTICAL SURGERY ILLUSTRATED. By Victor Pauchet. Translated by F. R. B. Atkinson, M.D., C.M. With an Introduction by Sir Charles Gordon-Watson, C.M.G., F.R.C.S., Surgeon and Joint Lecturer in Surgery, St. Bartholomew's Hospital. In six volumes. Boards. Price, 18 shillings 6 pence net, per volume. Pp. Vol. I, 293, with 217 illustrations; Vol. II, 252, with 199 illustrations; Vol. III, 248, with 308 illustrations; Vol. IV, 255, with 307 illustrations. London: Ernest Benn, Ltd., 1925.

Victor Pauchet's reputation as a brilliant surgeon has led to this translation. The work is not offered as a textbook of operative surgery, but is a presentation of operations as practiced by the author. The work is essentially an atlas of illustrations, drawn from life, depiciting the various operations step by step. A certain amount of text accompanies the presentation of each operation. While this is essentially secondary to the illustrations and deals chiefly with operative technic, other considerations, such as anatomy, pathology, diagnosis, therapeutic indications, postoperative care and prognosis, are included in some of the chapters. Each operative procedure is clearly presented, and the illustrations are excellent and show vividly each step as performed by the author. In the four volumes that have appeared are included five operative procedures dealing with surgery of the head and neck; two on tumors of the breast; one chapter on surgery of the biliary passages; nine on gastric surgery; two on the appendix; sixteen on surgery of the large intestine, including the rectum; eleven on gynecologic operations; five on genito-urinary surgery; two on hernia; one on hydrocele; one on open operations on recent fractures, and one on recurring dislocation of the shoulder. This material appears throughout the four volumes in utter confusion. Although each volume begins with a list of contents it lacks an orderly index, and nowhere is any reference made to a complete index for the entire work. Furthermore, is it conceivable why any surgeon would desire one volume alone, since the material covering any one subject is not collected in any one volume?

The author presents many original ideas and clever details of technic. Some of his ideas would not meet the approval of American surgeons; for, example the great faith he places in multiple drainage in cases of gangrenous appendicitis. Also he is an ardent disciple of Lane with all that this means and presents the subject under the title of "Lane's disease." Also his views on the pathology and operative treatment of goiter differ from those generally held, but demand consideration in view of the fact that he has performed 300 operations on the thyroid with only one death, and states that Berard of Lyons has operated on a thousand goiters without a death. The chapter on the operative treatment of fractures, which is contributed by Dujarier, advocates operation for practically all fractures of the long bones with displacement, including the clavicle. Steel bands and plates are advocated. In America the tendency is to limit open operations and particularly the introduction of nonabsorbable fixation apparatus as far as possible. Similarly, American surgeons would not follow his practice of regarding a gastro-enterostomy of Roux as the most rational operation for duodenal ulcer, nor would they recommend complete colectomy for congenital megacolon, and consider it an easier and milder operation than partial colectomy. In the treatment of carcinoma of the breast, Pauchet performs a radical operation of the usual type, but divides the clavicular portion of the pectoralis major and clears the axilla before dividing the sternal portion. He uses deep radiotherapy eight days before the operation and three weeks after. He is an advocate of gastrectomy for gastric and juxtapyloric ulcers. When he performs gastrojejunostomy, he does not close the pylorus. He advocates partial gastrectomy for postoperative jejunal ulcer. Total gastrectomy is described for carcinoma of the stomach. The end of the esophagus is united to the side of the jejunum, and a jejunojejunostomy is added to prevent regurgitation of bile into the esophagus. In the radical cure of inguinal hernia, the author describes his "endoperitoneal" method; the peritoneum is opened above the sac without disturbing the cord, a finger is inserted into the sac from within, and then with gauze the cord is peeled off from the sac which covers the finger. A portion of the rectus sheath is used to cover the cord. In nephrectomy for carcinoma of the kidney, he uses a transverse incision and a combination of the intraperitoneal and extraperitoneal route. For adenoma of the prostate he prefers the open operation under guidance of the eye to the blind method of Freyer. He believes that the operation should be performed in two stages in about 25 per cent. of the cases. He prefers the perineal route in fat persons or in those suffering from cardiac or renal disease. He makes use of preliminary vasectomy. He is an advocate of the transverse suprapubic incision in pelvic operations. For cicatricial stricture of the rectum, he performs perineal extirpation unless inflammatory complications are present. Under such circumstances a temporary colostomy is established, and the extirpation is delayed until after some months have elapsed.

In general, the work is distinctly interesting and contains much of value.

A SYSTEMATIC HANDBOOK OF VOLUMETRIC ANALYSIS OR THE QUANTITATIVE DETERMINATION OF CHEMICAL SUBSTANCES BY MEASURE, APPLIED TO LIQUIDS, SOLIDS AND GASES. Adapted to the Requirements of Pure Chemical Research, Pathological Chemistry, Pharmacy, Metallurgy, Manufacturing Chemistry, Photography, etc., and for the Valuation of Substances Used in Commerce, Agriculture, and the Arts. By Francis Sutton, F.I.C., F.C.S. Eleventh edition. Revised throughout, with numerous additions, by W. Lincolne Sutton, F.I.C., Public Analyst for the Counties of Norfolk and Suffolk, Norwich, Ipswich, etc., England, and Alfred E. Johnson, B.Sc., F.I.C., A.R.C.Sc.I., Additional Public Analyst for the County of Stafford and the Borough of Wolverhampton, etc., England. Cloth. Price, $9. Pp. 629, with 120 illustrations. Philadelphia: P. Blakiston's Son & Co., 1924.

To have served analytic chemistry for sixty-one years, and have reached eleven editions besides a French translation, is presumptive evidence of the usefulness of Sutton's Volumetric Analysis. It is not often that an author of a scientific book lives to see his publication pass its fiftieth year and still be in extended use. Such was the good fortune of Mr. Sutton, although he did not live to see the sixtieth aniversary of his work. When the first edition of the book appeared, volumetric analysis had scarcely more than begun to be an exact science. This work, therefore, has seen the subject expand from a relatively few methods for the analysis of a few substances to a large number of methods applicable in one form or another to the examination of a great number of materials. The volume covers such a wide range of topics that it will be found useful to analysts in almost every field. It concerns itself primarily with the general principles of analysis, alkalimetry and acidimetry, analysis by oxidation or reduction, and analysis by precipitation. Applied methods are given for inorganic substances, organic substances, urine, gas, water and sewage. The pitfalls in manipulation, sources of error and limits of accuracy in most analytic methods are discussed. The chapters on antimony, arsenic, iron, organic nitrogen, phenol (carbolic acid) and the salicylates will be helpful to analysts in medicine. From the American point of view the book is faulty in that it has not been revised to include some methods in much favor with American chemists. For example, the Hanus method for the determination of the iodin absorption number of fats and oils is not described, although it is official in the U. S. Pharmacopeia and is the official method of the Association of Official Agricultural

Chemists. Further, volumetric determination of alkaloids, an important feature in the analysis of medicines, is not described. No mention is made of the newer indicators, such as bromcresol green, bromthymol blue and bromcresol purple. The tables on the analyses of British public water supplies will not, of course, be of much value to American chemists and sanitary engineers. While the book will be useful as a work of reference to chemists in general, American analysts of medicines will probably continue to depend principally on the methods given in the U. S. Pharmacoepia, in the Official and Tentative Methods of Analysis of the Official Association of Agricultural Chemists, and in the more highly specialized works on the subject.

AN INVESTIGATION OF THE SALMONELLA GROUP, WITH SPECIAL REFERENCE TO FOOD POISONING. By William G. Savage, M.D., and P. Bruce White, B.Sc. Medical Research Council. Special Report Series, No. 91. Paper. Price, 3 shillings 6 pence net. Pp. 159. London: His Majesty's Stationery Office, 1925.

This technical report deals with the identification and classification of the salmonella group, its distribution in nature, and the effects produced in animals by salmonella infections. The authors state that the groups as described by them are distinctly distinguishable. Perhaps one of the most interesting experiments that they conducted was with the so-called heat-stable strains. The conclusion is apparently drawn that certain canned foods involved in outbreaks of food poisoning are sterile, but, with heat-stable toxic products of the bacteria present, the consumption of such bacterially-sterile food would cause symptoms. Furthermore, it is stated that repeated injections of animals with saline extracts of such suspected canned foods will in certain instances stimulate the appearance of low titer agglutination for salmonella bacilli. This is interesting, but the available evidence of food poisoning outbreaks in America does not confirm this contention. In addition, specific low titer agglutination in the blood serums of animals that have been injected with sterile food would appear to be of rather doubtful significance. The classification of types of strains used by these authors is apparently as follows: 1, *B. enteritidis;* 2, Derby; 3, *B. paratyphosus* B; 4, Stanley; 5, *B. aertrycke;* 6, Newport; 7, Reading; 8, *B. suipestifer;* 9, *B. abortus-equi.* Of these the authors declare that Nos. 1, 2, 4, 5, 6 and 7 can cause food poisoning in human beings. Moreover, they state that the common cause of food poisoning outbreaks are *B. aertrycke* and *B. enteritidis. B. suipestifer* is included, but not especially as a cause of food poisoning in man. *B. paratyphosus* B and *B. abortus-equi* are stated to have nothing to do with food poisoning. The last statement as to *B. paratyphosus* B is not confirmed by available data in America. *B. aertrycke,* regarded by the authors as the commonest cause of food poisoning, appears to be distributed in many animal hosts, among which are mice, rats and pigs. The authors state that *B. aertrycke* and *B. enteritidis* show marked irritant action on the stomach and duodenum of rabbits when these animals are fed with virulent strains. This phenomenon was demonstrated with living organisms, with bacterial emulsions killed at 60 C., and with boiled emulsions. They state, however, that "boiled bacilli" cause a more marked irritant action, and this appears to be local in character.

ATMUNGSAPPARAT. Die Untersuchungsmethoden der Nase, der Nebenhöhlen, des Rachens, des Kehlkopfes, der Luftröhre und der Bronchen, von Walter Albrecht. Die Untersuchung des Auswurfes, von Heinrich von Hoesslin. Die Technik der Perkussion: Die Technik der Auscultation: Röntgenologische Technik der röntgenologischen Untersuchung des Thoraxmittelschattens, insbesondere des Herzens und der grossen gefässe, von Heinrich Gerhartz. Funktionsuntersuchungen an den Lungen des Menschen mittels gasanalytischer Methoden, von Joh. Lindhard. Die Messung des intrapleuralen Druckes, von Paul Hoffmann. Methodik der Untersuchungen der Atemnerven, von Heinrich Boruttau. Handbuch der biologischen Arbeitsmethoden. Herausgegeben von Geh. Med.-Rat Prof. Dr. Emil Abderhalden. Abt. V, Methoden zum Studium der Funktionen der einzelnen Organe des tierischen Organismus, Teil 4, Heft 6. Lieferung 151. Paper. Price, 13,80 marks. Pp. 1323-1662, with illustrations. Berlin: Urban & Schwarzenberg, 1924.

This volume is part of a series edited by Prof. Emil Abderhalden, the different sections of which are covered by different authors. The subject is considered in such detail that no attempt can be made to review the book critically. The first section describes the examination of the upper respiratory passages, directly, and of the trachea and bronchi by electroscopic methods. The roentgenologic examination of each portion is considered separately, and enough detail to give the reader a general idea of the methods and findings. The succeeding section considers the gross, microscopic and chemical examination of the secretions of the respiratory passages, normal and pathologic, including the more simple qualitative methods for the detection of the drugs more commonly excreted. To the technic of percussion and of auscultation separate sections are devoted. Each includes a comprehensive discussion of the different methods of examination, with details of the technic and findings. The technic and results of roengenologic examination of the chest are gone into with equal thoroughness in the next chapter, and here, as in the preceding chapters on auscultation and percussion, the heart and great vessels are included. A chapter is devoted to the investigation of lung function by methods of gas analysis, with methods for the determination of lung volume, the minute volume of the blood stream, and the oxygen and carbon dioxid content of the venous blood entering the lungs. Then follow chapters on the measurement of intrapleural pressure by different methods, and a final chapter on methods of physiologic investigation of the respiratory nervous mechanism. The earlier chapters are of direct interest to every physician, and especially to those teaching physical diagnosis. The chapter on the roentgenologic examination also contains much that is of value to every clinician, but is of especial interest to the roentgenologist. The later chapters for the most part concern those interested in special investigation. The thoroughness with which each section is considered, and the abundant references to the literature, give the volume great value as a book of reference.

THE BLOOD: A GUIDE TO ITS EXAMINATION AND TO THE DIAGNOSIS AND TREATMENT OF ITS DISEASES. By G. Lovell Gulland, C.M.G., M.D., B.Sc., Professor of Medicine and Clinical Medicine in the University of Edinburgh, and Alexander Goodall, M.D., F.R.C.P.E., Assistant Physician to the Royal Infirmary. Third edition. Cloth. Price, 25 shillings net. Pp. 424, with 45 illustrations. Edinburgh: W. Green & Son Limited, 1925.

Much recent material has been incorporated in this edition. The aim of the book has been "to put in the hands of the student and practitioner a volume giving a concise and clear account of the diseases and diseased conditions of the blood and blood-forming organs, based on a large experience of them in clinical work and in the laboratory." The main interest in the book lies, therefore, in the histologic, pathologic and clinical aspects of the subject, the technical details of the chemical examination of the blood having been reduced to a minimum. The book is divided into five parts: methods of examination of the blood; the formed elements of the blood; diseases of the blood, bone-marrow and lymphoid tissues; the blood in special diseases, and diseases due to animal parasites. The subject matter is presented in a clear and concise manner. Of especial value is the rather full discussion of the various morphologic changes found in the blood cells in the diseases discussed, much of this material being based on the researches of the authors. The relationship of the pathologic changes in the blood to the clinical symptoms is brought out in an instructive manner, while the sections devoted to treatment are full and should prove of value to the clinician. The illustrations are adequate and the colored plates well done. This work should prove valuable in the daily routine of the student and the practitioner.

PROTEINS AND THE THEORY OF COLLOIDAL BEHAVIOR. By Jacques Loeb, Member of the Rockefeller Institute for Medical Research. Second edition. Cloth. Price, $3.50. Pp. 380, with illustrations. New York: McGraw-Hill Book Company, 1924.

This is a rather thorough revision and enlargement of the first edition. The late Professor Loeb, whose career and achievements are so much admired, has personally added new experimental work. He has thereby strengthened the arguments he advanced in his first edition. If his theory is correct, much has been accomplished in simplifying our vague ideas of certain colloidal phenomena; if not, that fact will be discovered in due time. Just now, however, there is need for this book.

Miscellany

TYPHOID FEVER OUTBREAK FROM OYSTERS IN NEW YORK

Interesting features of the epidemic of typhoid fever that affected New York and other cities during the past winter have been reported by Dr. Louis I. Harris, director of the Bureau of Preventable Diseases, Department of Health, New York City (*Monthly Buletin*, City of New York, Department of Health, **15**:18 [April], 34 [May], 50 [June] 1925). Dr. Harris relates the steps by which various avenues of infection were investigated and freed from responsiblity for this outbreak. A group of seven cases was traced to ice cream, and this false clue confused the search. The evidence incriminating shellfish included the unusually high incidence among the well-to-do, and among women; the low incidence among children; the use, by those affected, of various milk and water supplies; the safeguards constantly maintained as regards milk and water; the low incidence among nationalities that serve uncooked vegetables (notably Italians), and the large number of patients giving the history of eating oysters and other shellfish. Out of 914 cases recorded in the outbreak, oysters are known to have been eaten in 506. During the period of the epidemic, a number of sailors with typhoid were taken from ships to New York hospitals. Deducting these cases, secondary cases and the "normal" number of typhoid cases from the total of 914 leaves 650 as the estimated number of primary cases due to an unusual etiologic factor. Since 506 (78 per cent. of 650) gave a history of eating oysters, shellfish can be blamed with a considerable degree of certainty. Further evidence was gained by the questioning of 3,320 families by public health nurses as to the history of eating oysters. The well-to-do notably were unwilling to cooperate in this investigation, and, in many cases, resented inquiries and refused information. However, the inquiry disclosed that the well-to-do used shellfish four times as frequently as the poor. The fifty-two cases of typhoid among Italians were chiefly among the well-to-do. Of the 506 patients who were known to have eaten shellfish, 402 had eaten them at hotels and restaurants. Dr. Harris is not satisfied with the report of the United States Public Health Service, implicating the West Sayville oyster beds. The New York studies include the largest number of oyster-borne typhoid cases of any city, and these studies place a number of oyster beds under suspicion. The shellfish used by 341 persons were traced to nine different states. Since the largest part of New York's oyster supply always comes from Great South Bay, it is to be expected that the largest number of cases of typhoid fever could be traced to that source. That the danger of another typhoid epidemic is still present is indicated by a survey of sources of contamination of oyster beds, by the use of oysters from casual sources, and by the exposure to infection of those who bathe in polluted waters. Dr. Harris sugests a means of preventing typhoid from these causes. Shellfish must be produced, distributed and marketed under as careful regulations and supervision as are now applied to milk and water supplies. It is to the interest of the oyster industry to promote needed sanitary measures. Pleasure boats should not be allowed on or near oyster beds, and oyster-dredging vessels should be equipped for the storage and disinfection of excrement, which should never be emptied near oyster beds. The floating of oysters should be prohibited. Only in emergencies, and under certain restrictions, should the transplantation of oysters from polluted waters be permitted. It is recommended that shellfish should be chlorinated as a precaution additional to the observance of all other sanitary measures. Clean ice for refrigeration and clean water for washing oysters are requisite. The cleanliness and sealing of containers should be prescribed and inspected. Shuckers and other laborers who handle oysters should be given medical examinations. With these precautions, Dr. Harris believes that the number of cases occurring each year from unknown causes would be considerably decreased, and that the present danger of another acute outbreak of typhoid would be greatly reduced. Finally, Dr. Harris points out that the observance of these precautions is to the interest of the oyster industry.

FATALITIES IN COAL MINES

Accidents at coal mines in the United States in May resulted in the loss of 181 lives, according to the Bureau of Mines. The death rate was 4.15 per million tons of coal produced, as compared with 3.33 for May, 1924. The increase was due mainly to an explosion at Sanford, N. C., May 27, in which fifty-three lives were lost, and to another at Piper, Ala., May 31, which killed six men. Without these disasters the death rate for the month would have been 2.80 per million tons of coal mined. Records compiled by the Bureau of Mines for the first five months of 1925 show that 930 men lost their lives in the mines. The production of coal during the period was 234,978,000 tons, making the fatality rate 3.96 per million tons; for the corresponding months last year, the rate was 4.82. Six major disasters, with a total loss of 154 lives, occurred during the first five months of this year, as compared with five disasters and a loss of 384 lives for the corresponding months of last year. An examination of the causes of accidents that have occurred thus far in 1925 shows a substantial reduction in the death rate per million tons caused by explosions of gas or coal dust, a slight increase in haulage accidents, and no material change for accidents due to explosives, electricity and falls of roof and coal.

REPORT OF JOINT COMMITTEE ON HEALTH PROBLEMS IN EDUCATION

A committee representing the National Education Association and the American Medical Association, with the cooperation of the National Committee for the Prevention of Blindness, conducted a study for more than a year of the conservation of sight of school children. Dr. Thomas D. Wood, Columbia University, was chairman of the committee. The study extended into 375 cities and rural districts in every state and was assisted by about 100 ophthalmologists and by school and health authorities. In its report before the National Education Association, Indianapolis, July 1, the committee shows that about 5,000,000 school children in the United States received eye examinations during the period of this study, and that about 12 per cent. of them had defective vision. This figure suggests that considerable progress in eyesight conservation has been made in the schools since previous studies. Generally, the rural districts report a larger percentage of defective vision than city districts. Rural districts in Pennsylvania, for example, showed 16.8 per cent. of defective vision among 500,000 pupils examined, while in the cities only 8.5 per cent. showed defective vision among 370,000 pupils examined. Rural districts in Iowa report 14.4 per cent. defective vision, and city districts in Iowa 6.3 per cent. defective vision. The problem facing school administrators, the report says, is to find the means of removing the handicap of defective vision of one eighth of the 24,000,000 school children; even when the most effective service is rendered for conserving the sight of school children, there will still be about 48,000 in the United States with such seriously defective vision that they cannot be educated in the regular classes. These children are not blind and cannot be profitably educated in schools for the blind where educational methods are adapted to finger reading. In only seventeen states is the examination of the eyes of school children compulsory and, of these, few specify the portion of the school population to be examined or the frequency of the examinations. Among the recommendations of the committee are (1) a uniform model law for the examination of the eyes of school children in all states and cities; (2) greater emphasis on the matter of conserving children's vision, especially the finding and correction of the faulty conditions of vision, providing properly lighted classrooms and making special provision for conservation of vision classes for those having seriously defective vision, and (3) examination of the eyes of all pupils yearly under the best possible conditions and by the most skilled persons available.

Medicolegal

What Are External and Visible Marks of Injury

(Feis v. United States Ins. Co. (Neb.) 201 N. W. R. 558)

The Supreme Court of Nebraska, in affirming a judgment in favor of the beneficiary of an accident insurance policy, says that one of the provisions of the policy was that the company should be liable only where there were some external and visible marks of an injury. The evidence showed that the insured received a violent blow on the stomach sufficient to knock him down, to affect his breathing, and to cause a slight pallor in his face at the time of the accident. There was also medical testimony that such a blow would probably cause a reddening of the skin which would soon disappear. Were there any "external and visible marks"? The words must not be strictly, but liberally, construed as regards the insured. It is not required that such marks shall be either immediately visible or enduring in their nature. What is essential is that there is some manifestation abnormal in its nature and affecting the physical man, the existence of which may be ascertained by observation or examination. In this case the insured did not think that he was much hurt, and for several days worked as usual. Apparently he was not examined by any one until after he had, on the sixth evening after the accident, vomited blood. There was no proof that there was then any visible mark of the blow on his body. Much medical testimony was adduced on the question of whether, if a mark had been made on the body at the time of such a blow, it would have disappeared before the time the examination was made, and on the question as to the probable existence of gastric ulcer. The court holds that the requirements as to external and visible marks were sufficiently met.

Injunction Against Chiropractor Practicing Medicine

(Louisiana State Board of Medical Examiners v. Cronk (La.), 102 So. R. 415)

The Supreme Court of Louisiana says that the defendant was a chiropractor, and appealed from a judgment of a district court sustaining an injunction sued out against him by the state board of medical examiners, restraining him from further practice, and awarding the plaintiff board attorney's fees in the sum of $50. The basis of the injunction proceeding was that the defendant was practicing medicine in the state of Louisiana without having obtained a certificate from the board as required by Section 15 of Act 56 of 1914. The defendant did not pretend to have complied with the law of the state requiring examination before, and certificate from, the board, but set up in his answer the defense that he was not practicing medicine within the definition of the medical act, and held license from both the state of Louisiana and the city of Alexandria as authorization for the pursuit of his calling. He testified that he used no drugs in his practice, which consisted solely in adjusting the subluxated vertebrae of the spine with both hands, and that the application of the hands was not in the nature of either rubbing or pressing, but was a thrusting movement. He admitted that the purpose of making these adjustments was to bring about a correction of the subluxation of the vertebrae, and thereby produce a normal functioning of the organs of the body, or a betterment in the condition of the health of his patients. He also admitted that he had a card in the newspapers as a chiropractor, so that people desiring adjustments would know where to find his office. He admitted, too, that he treated a good many persons suffering with liver, kidney and stomach complaints, and with other bodily ailments.

As, under Section 13 of the medical act, the mere direction or application of physical force for the treating, curing or relieving of any disease or ailment is made an offense, it was clear from the testimony in this case that the defendant had violated that section, as he was practicing medicine within the intent and meaning of the act, and without having obtained a certificate from the state board of medical examiners, as required by Section 15 of the act. Under such circumstances the injunction was properly and rightfully sustained, with attorney's fees in the sum of $50 in favor of the plaintiff board; and the judgment appealed from is affirmed, at the cost of the appellant.

It is well settled that neither a state nor a municipal license entitles a licensee to pursue his business in violation of the criminal laws of the state, or in violation of the ordinances of a city. The possession of such license by the defendant was therefore unavailing as a defense. It is also equally well settled that the state, in the legitimate exertion of its police power for the protection of the public health, is fully authorized to make provisions deemed necessary for that purpose, and to determine what is, or shall constitute, the practice of medicine. Such provisions, being enacted for the public good and the general welfare, cannot be construed as an illegal interference with the constitutional right of every citizen to earn a living.

Roentgen-Ray Examination of Eye Required—Damages

(Kosak v. Boyce (Wis.), 201 N. W. R. 757)

The Supreme Court of Wisconsin says that on November 23 the plaintiff was struck across one eye by part of a spring. That afternoon he called on the defendant, who specialized in diseases of the eye, ear, nose and throat, and told him that he thought there was a piece of steel in the eye. The defendant examined the eye, found a scratch across the center of the cornea, but concluded that the cornea was not perforated, that there was nothing of a foreign nature in the eye, and that the eye had suffered no internal injury. Other visits were made to the defendant on the 24th and 26th, on each of which occasions he examined the eye, as he had done on the 23d, by the use of the ophthalmoscope, direct illumination and oblique focal rays, but discovered nothing in the eye. He did not again examine the eye to discover whether the cornea had been perforated. He concluded that the scratch on the cornea accounted for the pain, and for the sensation which caused the plaintiff to believe that there was something in the eye; and he treated the eye merely with the view of healing the scratch. December 27 and 29 and February 9 were the dates of further visits, on the last of which the defendant discovered an opacity in the lens. From the 11th to the 26th of February the plaintiff made frequent calls at the office of an eye surgeon, who on each occasion made a careful examination with the ophthalmoscope, practically as the defendant had done. During the course of these examinations the surgeon discovered two opacities in the lens of the eye, but did not discover anything in the nature of a foreign substance in the eye until the 26th, after which he caused two or three roentgenograms to be taken, which revealed the presence of a foreign object in the eye. April 8, a small piece of steel was removed by the use of a magnet. May 10, a needle operation was performed on the eye, and on June 27 the lens of the eye was removed.

The mere fact, standing alone, that the defendant failed to locate the foreign substance in the plaintiff's eye by the use of the ophthalmoscope did not necessarily indicate that he was negligent in its use, especially in view of the difficulty experienced by the surgeon in locating the foreign substance by the same means. But the court thinks that the evidence justified the finding that the defendant was negligent in failing to use the roentgen ray for the purpose of ascertaining whether a foreign substance was present in the eye, although, according to the testimony, the roentgen ray is employed as a sort of last resort, and its use is rather infrequent; it is used in only from 2 to 4 per cent. of the cases of eye injuries, the frequency of its use varying somewhat among practitioners, and the necessity for its use depending no little on the judgment of the practitioner and on the satisfaction which the ophthalmoscopic examinations give him; and, besides, the use of the roentgen ray is somewhat expensive, and the expense must be justified.

The jury awarded the plaintiff $2,000 damages, but the affirmation of a judgment in his favor is conditioned on his accepting one for $500 only, because he was entitled to damages for only the pain and suffering sustained as the proximate result of the defendant's negligence, there being no basis in the record for the assessment of any damages for the impairment of the eyesight, the testimony of the experts

being to the effect that the damage to the eye occurred when the foreign substance entered the eye, and not when it was removed; that whenever such a substance is removed by a magnet operation, whether early or late, a cataract will follow which will necessitate the removal of the lens. But as such pain and suffering was an element of damages not compensable under the workmen's compensation act, no deductions from the $500 should be made under the provisions of Section 2394—25 (3) of the Wisconsin Statutes of 1921 for any amount paid to the plaintiff by his employer under the provisions of the workmen's compensation act.

Case in Which Femur of Child Was Broken in Delivery

(Kos v. Brault (Mass.), 146 N. E. R. 16)

The Supreme Judicial Court of Massachusetts says that the defendant physician was called to attend the plaintiff's wife in childbirth. In the delivery, which occurred at about 3 a. m., December 19, the femur in the left leg of the child was broken. Contradicted by the defendant, the plaintiff introduced evidence which warranted a finding that the defendant did nothing for the broken bone at that time; that he went away and returned at about 6 p. m., and then set the leg in splints in a manner that was improper and did not serve the purpose for which the splints were intended; that at about 6 p. m. the next day the defendant returned to see the child, and did not thereafter call to see or attend it. There was further evidence for the plaintiff that the splints became loose on the 23d and the defendant was notified thereof; that on the 24th a message was sent to him that the splints had fallen down, with a request that he should come to the house; that on the 25th the plaintiff called at the defendant's home and asked that he be sent to see the child, as the bandages were down and it was constantly crying. The evidence was undisputed that on the morning of the 26th the plaintiff, in the exercise of reasonable care, engaged another physician to attend the child, and later in the day the plaintiff notified the defendant, on his arrival at the house, that his services were no longer required. The second physician found that the hematoma over the part of the bone that was broken was in a septic condition. It further appeared that, following an operation and treatment by that physician, blood poisoning set in and the child died, January 19, as a direct result of such poisoning.

For the defendant, there was medical testimony that in a delivery under conditions such as existed in this case it was not uncommon for a leg to be broken. There was also testimony that after the birth the defendant tied the broken leg to the child's body in such a way that no further injury could develop; that he set the leg on the evening of the same day; that he called to see the child every day from December 19 to 26 (except on the 24th, when he was out of town), until he was discharged by the plaintiff; and that he kept the splints in place around the leg by reenforcing the bandages.

At the request of the plaintiff, who brought this action as administrator of the estate of the child to recover for the death and conscious suffering of the child, the presiding judge instructed the jury that if it found that proper treatment of the child required that the leg be mobilized, and that the defendant in attempting to accomplish mobilization placed on the leg improper splints, or carelessly permitted the splints to become loose, and if the result of that was that the fractured ends of the bone injured the tissues, which caused the septic condition, then the jury might find that the defendant was liable for the septic condition and its consequences. The jury, however, found for the defendant, and thereby necessarily found that no original negligent act, and no want of that reasonable degree of learning, skill and experience which the defendant in law was required to possess and exercise, caused the bone in the leg to be broken during the delivery, or at the birth of the child; or caused, through inattention, neglect and lack of professional skill, a septic condition in the leg over part of the bone that was broken. With the finding of the jury, there was no issue of damages to which was applicable a requested ruling that the defendant was responsible for the result, even though the treatment of the second physician was improper and negligent.

There was no reversible error in the negative answer to the question to the physician and defendant: "Was there anything in your treatment of the case, as you saw it, that was different from the treatment of such a case by the ordinary practitioner under similar circumstances?"

Exceptions to verdict for the defendant overruled.

Validity of Will Made After Paralytic Stroke

(Payne v. Payne et al. (W. Va.), 125 S. E. R. 818)

The Supreme Court of Appeals of West Virginia, in reversing a decree that was rendered for the plaintiff in a suit to impeach a will, says that the testator, aged 74, suffered a stroke of paralysis, April 17, which affected his entire left side. While very ill, April 26, he executed his will. He died, June 21. For a week or two at least he was unable, because of the impediment in his speech and his weakened condition, to express his thoughts as readily and clearly as before. But while it was undoubtedly true that he was physically enfeebled, and it might be true that his mind had lost much of its former vigor, neither from the proof of his condition nor from the circumstances of the will itself could the court say that he was incapable of recollecting his properties and of determining the manner of their disposition. In a suit to annul a will on the ground of mental incapacity of the testator, mere infirmity of mind and body, due to a paralytic stroke, is not sufficient to overcome the legal presumption of capacity in the testator. The true test of his mentality is to be determined as of the time the will was made and executed. It must affirmatively appear that he did not then have mind sufficient to understand the nature and consequences of his act, the property to be disposed of, and the objects of his bounty. If undue influence is charged, the testator's weakened physical and mental condition is to be considered, but the undue influence must be shown to be such as wholly to destroy the free agency of the testator, and substitute the will of another for his.

Information Gained by Participant in Examination

(Leonczak v. Minneapolis, St. P. & S. S. M. Ry. Co. (Minn.), 201 N. W. R. 551)

The Supreme Court of Minnesota says that the plaintiff in this action to recover damages for injuries went to the office of a physician for medical advice and treatment. Another physician was there. The defendant offered to prove by the latter physician the condition found on the examination made by the plaintiff's physician. The evidence was rejected on the objection of the plaintiff. The physician by whom the defendant wanted to make such proof testified that the plaintiff's physician asked him to look at the plaintiff; that he asked him because he was a physician and surgeon; that he wanted his professional opinion; that the plaintiff did not object; that he participated in the physical examination with his consent; that the examination was in a professional capacity as a physician and surgeon; that the plaintiff's physician asked him in such capacity; that what he learned from the examination was learned in order to enable him to act in that capacity; and that after the examination he gave his professional opinion to the plaintiff's physician. The court holds that the information acquired by the participating physician was privileged within the Minnesota statute under which a physician or surgeon cannot, without the consent of his patient, disclose any information which he acquired "in attending the patient in a professional capacity, and which was necessary to enable him to act in that capacity."

Society Proceedings

COMING MEETINGS

National Medical Association, Chicago, Aug. 25-28. Dr. Clyde Donnell, 121 Parrish Street, Durham, N. C., Secretary.

Oregon State Medical Society, Medford, Sept. 2-4. Dr. C. L. Booth, 1021 Selling Bldg., Portland, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domstic prior to 1923. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

29: 729-870 (June) 1925

Development and Diet of Chinese Children. J. Hammond and H. Sheng, Peking, China.—p. 729.
*Duodenal Contents of Infants in Health, and During and Following Diarrhea. W. C. Davison, Baltimore.—p. 743.
*Acid Effect of Hydrochloric Acid and Lactic Acid Milk. R. G. Flood, San Francisco.—p. 757.
*Anhydremic Acidosis Due to Lactic Acid. S. W. Clausen, St. Louis.—p. 761.
*Auricular Fibrillation. R. T. Ogden, Hartford, Conn.—p. 767.
*Basal Metabolism of Children with Ichthyosis. F. B. Talbot and M. Hendry, Boston.—p. 770.
*Lipolytic Activity of Blood Serum in Tuberculosis. E. T. Wilkes, New York.—p. 773.
Goiter Incidence in School Girls of New York City. I. H. Goldberger and A. K. Aldinger, New York.—p. 780.
Congenital Webbing. J. M. Frawley, Rochester, Minn.—p. 799.
Recent Work in Anatomy, Physiology and Pathology of Infancy and Childhood. J. B. Holmes, Baltimore.—p. 806.

Duodenal Contents of Infants with Intestinal Disturbances.—The data presented by Davison suggests that in digestive disturbances in infants, especially in diarrhea and, to a lesser extent, in bacillary dysentery, the activity of the duodenal amylase and trypsin is decreased, and the hydrogen ion concentration of the duodenal contents and the numbers of colon bacilli in the duodenum are increased.

Acid Effect of Hydrochloric and Lactic Acid Milk.—Flood asserts that hydrochloric acid milk exerts a marked diuretic action not shared by lactic acid formulas. The total acidity of the urine, which is the measure of the acid effect produced by any ingested acid, is markedly increased by hydrochloric acid, but is little changed by lactic acid milk. The reason that lactic acid has little effect on the total acidity of the urine is probably because it is completely oxidized in the blood stream, and, therefore has little effect on the acid base balance of the blood plasma.

Lactic Acid Acidosis.—Evidence is presented by Clausen for the existence of a type of acidosis due to lactic acid. This type of acidosis occurs clinically in cases of circulatory failure, especially in cardiac decompensation and anhydremia. Anhydremic acidosis is not caused by lactic acid in all cases. Ketosis is not marked in lactic acid acidosis. Lactic acid acidosis is adequately relieved by the treatment of the underlying circulatory condition. Administration of alkali in lactic acid acidosis is liable to cause alkalosis.

Auricular Fibrillation in Child.—Ogden reports a case of auricular fibrillation in a child, aged 10 years. Only three cases of patients, 10 years of age or less, have been reported in the literature; two were rheumatic in origin and one followed diphtheria. Ogden's patient had had diphtheria, chickenpox and influenza.

Basal Metabolism in Ichthyosis.—Basal metabolism studies made by Talbot and Hendry lead to the conclusion that ichthyosis in the majority of cases is not due or related to hypothyroidism. Whatever seeming temporary improvement may result from the administration of thyroid extract must be explained by some other means than the direct action of thyroxin on the metabolism.

Lipolytic Activity of Blood Serum in Tuberculosis.—Wilkes states that in the majority of cases of active tuberculosis in children and in adults, there is a lowered activity of the serum. No absolute rule can be made for determining the prognosis of a given case of tuberculosis from the value of the serum lipolytic activity, but in general the greater the severity of the tuberculosis the lower is the lipolytic activity of the serum.

American Journal of Hygiene, Baltimore

5: 245-370 (May) 1925

Production of Anti-Agglutinins. R. R. Hyde and E. I. Parsons, Baltimore.—p. 245.
Excystation in Giardia Lamblia from Man. R. W. Hegner, Baltimore.—p. 250.
Giardia Felis N. Sp., from Domestic Cat and Giardias from Birds. R. W. Hegner, Baltimore.—p. 258.
Culicoides of North and Central America and West Indies. W. A. Hoffman, Baltimore.—p. 274.
Trichomonas Vaginalis Donne. R. W. Hegner, Baltimore.—p. 302.
*Survey of Turpentine Industry for Possible Larvicidal Substances. M. E. Barnes.—p. 309.
*Toxic Action of Oil Films on Mosquito Larvae with Reference to Pine Oil Films. M. E. Barnes.—p. 315.
Life Table Nomogram. R. Pearl and L. J. Reed, Baltimore.—p. 330.
Experimental Methods for Study of Epidemics. L. T. Webster, New York.—p. 335.
*Irritating Properties of Larva of Parasa Hilarata Staudinger. R. G. Mills, Peking, China.—p. 342.

Larvicidal Properties of Turpentine.—Among the raw materials, products and by-products of the turpentine industry, which were studied by Barnes, larvicidal properties in sufficient strength to merit further investigation were found only in turpentine and in pine oil. Turpentine, after standing for some time, was found to be effective against both anopheles and culicine larvae. It is too expensive, however, to be employed in antimosquito work. Pine oil was found to be effective against both anopheles and culicine larvae.

Effect of Pine Oil on Mosquitoes.—Pursuing his studies of pine oil, Barnes found that it has a powerful soporific or paralyzing effect on mosquito larvae and pupae, and in effective doses results in their death either directly or, apparently, by drowning while under the effects of the drug. Anophelene and culicine larvae are able to withstand prolonged submersion in water. Anophelene and culicine larvae, in many cases, may be resuscitated after prolonged submersion, even after being in contact with oil films. Crude oil is an efficient and economical vehicle for carrying pine oil to larvae by means of film dosage. A mixture of crude oil and pine oil in the proportions of nine parts of the former to one of the latter produces a better film than either ingredient, and one which is highly effective in destroying all stages of anophelene and culicine larvae and pupae. The ova of *Anopheles quadrimaculatus* Say are partially resistant to pine oil acting through films.

Irritating Properties of Larva of Parasa.—*Pasasa hilarata*, Staudinger, has been found in North China (Peking and its environs) and has been shown to possess intense irritating properties. Mills says that injury is due to the mechanical introduction of a toxic substance by contact with any of the sharp pointed spines widely distributed over its body. It is apparently not necessary for a portion of the spine to remain in the skin. The so-called "Nettling hairs" are of very little importance. The toxic substance, which is contained within the spines, has not been separated therefrom. It was destroyed or inactivated by almost every procedure employed by Mills, the chief exceptions being water, liquor formaldehydi 5 per cent. and sodium hydrate 1 per cent. Living larvae are more irritating than dead ones, regardless of the manner in which they are killed. Rigidity of the body is not a necessary factor in the production of lesions with killed larvae. Spines, just severed from the body, retain their irritating properties, but preparations and extracts from various portions and produced in many ways failed to induce more than a slight mechanical injury in a few instances. The hypothetic toxic principle has not been definitely isolated and very little is known as to its nature. Observations bearing on the habits and life history of the species are described by Mills.

American Journal of Pathology, Boston

1: 247-340 (May) 1925

*Experimental Glomerulonephritis. E. T. Bell, B. J. Clawson and T. B. Hartzell, Minneapolis.—p. 247.
*Fibroma of Acoustic Nerve. V. C. Jacobson, Albany, N. Y.—p. 259.
*Pathology of Hypophysis. II. Lymphocytic Infiltration. J. P. Simonds and W. W. Brandes, Chicago.—p. 273.
Adenocarcinoma Resembling Thyroid. W. H. Feldman, Colorado.—p. 281.
Tissue Changes After Experimental Deep Roentgen-Ray Irradiation. A. Kolodny, Iowa City.—p. 285.

Mitochondria. I. Changes Occurring During Experimental Thyroid Hyperplasia and Its Involution with Iodin. D. P. Seecof, New York. —p. 295.
Origin of Mononuclear Phagocytes of Peritoneal Exudates. F. A. McJunkin, St. Louis.—p. 305.
*Filtrable Viruses. I. Cultivation of Vaccine Virus. F. Parker, Jr., and R. N. Nye, Boston.—p. 325.
Filtrable Viruses. II. Cultivation of Herpes Virus. F. Parker, Jr., and R. N. Nye, Boston.—p. 337.

Experimental Glomerulonephritis.—The results obtained by Bell et al. were: intravenous injections in rabbits of several strains of streptococci from human sources produced in several instances nephritis of the spontaneous type (lymphocytic interstitial nephritis) but did not result in glomerulonephritis. Similar injections in monkeys resulted in two cases of severe nephrosis, one of acute interstitial nephritis, one of glomerulonephritis, and one of a type not yet determined. The case of glomerulonephritis was characterized by epithelial crescents, fusion of glomerular lobules to the capsule of Bowman, swelling of the endothelium with occlusion of the capillaries, and atrophy of tubules associated with occluded glomeruli. Glomerulonephritis has been produced in one monkey by intravenous injections of streptococci.

Fibroma of Acoustic Nerve.—Three cases of verified tumors of the cerebellopontile angle are reported by Jacobson. In one instance the tumors were bilateral and of practically the same size. The four tumors in the three cases reported were of almost identical histology and agreed essentially with the descriptions of the tumors of the nervus acusticus as described by Cushing, Mallory, Councilman and Goodpasture.

Lymphocytic Infiltration of Hypophysis.—Twenty-one cases of lymphocytic infiltration of the hypophysis, a lesion that does not appear to have been previously described in detail, are reported by Simonds and Brandes. The data available are insufficient to justify an opinion as to the effect of this change on the function of the hypophysis.

Cultivation of Vaccine Virus.—Vaccine virus was successfully cultivated by Parker and Nye in an artificial medium for 132 days. After 198 days, the virus was not demonstrable by the usual methods, but apparently gave rise to a certain degree of skin immunity as tested by revaccination. A method has been devised by means of which the virus content of any culture can be determined with a fair degree of accuracy. Using this method, the eleventh generation of one culture was shown to contain 51,000 times as much virus as the material from which it was started. These results suggest that the virus grows only in close proximity to the cells. Whether this growth takes place intracellularly or extracellulary cannot be stated at this time. Various other methods for the cultivation of vaccine virus were tried without sucecss.

Annals of Clinical Medicine, Baltimore

3: 667-729 (May) 1925

*Glycolysis. H. J. John, Cleveland.—p. 667.
*Cutaneous Actinomycosis Recurring After Pregnancy. A. H. Waterman and G. F. Patrick, Chicago.—p. 697.
Interrenal Rhabdomyoma. W. H. Gordon and M. S. Feldman, Detroit. —p. 706.
Relief of Asthma in Presence of Chronic Bronchitis with Emphysema Through Nasal (Sphenopalatine) Ganglion. G. Sluder, St. Louis. —p. 718.

Glycolysis.—John's work has shown that a definite and uniformly progressive glycolysis takes place in blood in vitro. The cause of glycolysis is still undetermined. The degree of glycolysis is less in diabetic blood than in blood from normal subjects. The degree of glycolysis in both nondiabetic and diabetic blood is less when the specimen is kept at icebox temperature than when kept at room temperature. For comparative blood sugar studies to be of final value a uniform technic is required in order to avoid the intervention of the glycolysis factor.

Recurrent Cutaneous Actinomycosis After Pregnancy.—The points of particular interest in the case cited by Waterman and Patrick were: (1) Absence of any etiologic factors that might account for actinomycotic infection. The only thing that might be incriminating was the fact that the patient chewed grass in childhood. (2) Each time the patient became pregnant, actinomycotic symptoms appeared or were intensified. (3) Recurrence after apparent cure lasting sixteen months. (4) Roentgen-ray treatments continued over a long period of time controlled the condition, but were not successful in eradicating it, relapses occurring when the treatments were stopped. (5) Intravenous massive injections of sodium iodid were efficacious in controlling the symptoms of the disease and were well tolerated while slight doses were not. (6) There was no idiosyncrasy toward iodism when the sodium iodid was injected into the blood stream in large doses, although the small amount caused severe reaction.

Archives of Dermatology and Syphilology, Chicago

2: 721-880 (June) 1925

Skin Diseases and Syphilis in English Colonies of North America. J. E. Lane, New Haven, Conn.—p. 721.
*Wassermann Test. XIV. Effect of Sulpharsphenamin. D. L. Belding, Boston.—p. 736.
*Protein Sensitization in Pruritus with Lichenification. F. Wise and M. A. Ramirez, New York.—p. 751.
*Monilia as Possible Etiologic Factor in Psoriasis. M. S. Fleischer and M. Wachowiak, St. Louis.—p. 756.
*Clinical Significance of Some Common Dermatoses. F. J. Eichenlaub, Washington, D. C.—p. 759.
*Value of Flumerin in Treatment of Syphilis. J. C. Fox, Jr., G. H. Gilderaleeve and J. F. Preston, New Haven, Conn.—p. 768.
*Pemphigus; Davis Treatment. G. W. Wende, Buffalo.—p. 782.
Experimental Studies on Immunity in Herpes Simplex. S. S. Greenbaum and M. J. Harkins, Philadelphia.—p. 789.
Hair; Hypertrichosis. C. H. Danforth, Stanford University, Calif. —p. 804.

Effect of Sulpharsphenamin on Wassermann Test.—The effect of sulpharsphenamin on the Wassermann reaction in a series of sixty-nine patients with acquired and congenital syphilis has been studied by Belding by periodic measurements of the Wassermann antibody. The results in these particular cases are reported and observations are made on some of the variable factors influencing the serologic effect of treatment.

Protein Sensitization in Pruritus.—Wise and Ramierez have obtained reactions in cases of neurodermatitis not only to the foods but also to pollens and animal emanations. It may be possible to divide the cases of neurodermatitis in a similar way to the present classification of bronchial asthma, namely, into the allergic and nonallergic types.

Monilia in Psoriasis.—In a series of thirty cases of psoriasis, Fleisher and Wachowiak found monilia or monilia-like organisms in the feces in 82 per cent., in the blood in 21 per cent., in the skin scrapings in 46 per cent. In normal subjects, monilia was found in only 6 per cent. of about 100 stools; on the skin of unexposed portions of the body (twenty-seven cases) and in blood cultures in no cases. It appears that the use of a vaccine prepared with these organisms is of some value in the treatment of psoriasis. These findings suggest strongly that the monilia and similar organisms bear some causal relation to psoriasis.

Dermatoses.—Twelve cases of common dermatoses falling in three general groups of constitutional disturbances are cited by Eichenlaub. Most of these patients have been benefited both in their general health and with respect to their dermatosis by the discovery of constitutional defects.

Flumerin in Syphilis.—Twenty-four patients were given a total of 185 injections of a 2 per cent. solution of flumerin over a period of eighteen months. The general plan was to give two doses of 3 mg. per kilogram of body weight twice a week, then a second two doses of 4 mg. per kilogram, and the remaining six of 5 mg. per kilogram, provided no toxic symptoms ensued. In that case, either a smaller dosage was resorted to or flumerin treatment was abandoned, depending on the severity of the toxic effects. Flumerin caused rapid regression and healing of all types of secondary lesions and somewhat slower but steady resolution and healing of tertiary lesions. A fairly active spirocheticidal value was established for the drug. No uniformly striking effect on the Wassermann reaction was obtained either when flumerin was used as the first method of treatment or in conjunction with the arsphenamins. One clinical relapse occurred under treatment. Five patients developed toxic symptoms severe enough to contraindicate further administration of the drug.

Davis' Treatment of Pemphigus.—Wende reports nine cases of pemphigus in which the Davis treatment gave good results. The treatment consisted of the injection of 0.065 gm. iron cacodylate, intravenously, and 1.5 c.c. of a 3 per cent. solution of coagulen, subcutaneously.

Arkansas Medical Society Journal, Little Rock

22: 1-17 (June) 1925

Vomiting in Infancy. D. Smith, Hope.—p. 1.
Case of Postoperative Fecal Fistula Slow to Heal. H. A. Stroud, Jonesboro.—p. 4.
Unusual Result of Gunshot Injury. A. E. Chace, Texarkana.—p. 5.
Cancer of Uterus. W. R. Brooksher, Fort Smith.—p. 6.
Simple Method of Removing Foreign Bodies from Nose. R. C. Dorr, Batesville.—p. 9.

Atlantic Medical Journal, Harrisburg, Pa.

28: 485-552 (May) 1925

Equipment and Technic for Use of Local Anesthesia. R. E. Farr, Minneapolis.—p. 485.
Local Anesthesia in Surgery of Neck. H. L. Foss, Danville.—p. 488.
Local Anesthesia in Surgery of Abdominal Wall and Cavity. C. F. Nassau, Philadelphia.—p. 492.
Local Anesthesia in Surgery of Extremities R. J. Behan, Pittsburgh.—p. 495.
Enlarged Thymus; Diagnosis and Radium Treatment. G. W. Grier, Pittsburgh.—p. 502.
Arachidic and Other Forms of Vegetal Bronchitis. C. Jackson, G. Tucker and L. H. Clerf, Philadelphia.—p. 506.
Influence of Focal Infections on Acoustic Nerve and Its End Organ. G. F. Gracey, Harrisburg.—p. 508.
Fractures of Nose. B. C. Gile, Philadelphia.—p. 512.
Fractures of Mandible. R. M. Entwisle and J. A. Gardner, Pittsburgh.—p. 515.

Boston Medical and Surgical Journal

192: 1085-1142 (June 4) 1925

*Clinical Significance of Recent Studies of Capillaries. E. P. Boas, New York City.—p. 1085.
Factors Important in Stimulating and Promoting Hospital Interdepartmental Cooperation. B. H. Mason, Boston.—p. 1091.
Hospital Library Service in New England. E. K. Jones, Boston.—p. 1093.
Opportunities for Postgraduate Study in Vienna. A. Thorndike, Jr., Boston.—p. 1094.
Rural Medical Service in Massachusetts. G. H. Bigelow and F. D. Adams, Boston.—p. 1097.
Surgical Indications Arising During Medical Management of Gastric Ulcer. S. M. Jordan.—p. 1106.
Fractured Neck of Femur. Transplantation of Femoral Head to Trochanter. E. G. Brackett, Boston.—p. 1118.
Hollow Dilator for Use in Cases of Chronic Tracheal Stenosis. F. E. Cruff.—p. 1120.
Legal Decision Concerning Physician and Massachusetts Workmen's Compensation Act. T. K. Richards, Boston.—p. 1121.

Circulation in Capillaries.—The function of the circulating blood is to be the vehicle by means of which the substances necessary to the life of the tissues reach the cells, and through whose agency the waste products of metabolism may be removed from the cells and be disposed of in one way or another. It is in the capillaries that this exchange between the tissues and the blood takes place; and it is because of an abnormal flow of blood through the capillaries in various parts of the body that symptoms of disease arise when the circulation is impaired in whole or in part. Thus heart failure sufficient to cause chronic passive congestion of the viscera is of significance, because the stasis of the blood in the capillaries interferes with the metabolic activities of the organ involved and results in symptoms referable to malfunction of that particular viscus. The blood flow in the capillaries, Boas says, therefore is a measure of the efficiency of the circulation.

192: 1143-1190 (June 11) 1925

Physician as Custodian of Health of People: But Who Shall Guard Custodian Himself? D. Cheever, Boston.—p. 1143.
*Psychotherapy as Practical Measure in Outpatient Work. M. W. Peck, Boston.—p. 1151.
Physiology of Chest. C. C. Stewart, Hanover, N. H.—p. 1157.
Postoperative Acidosis. H. C. Clifton and B. B. Landry, Hartford, Conn.—p. 1161.
*Case of Extreme Ascites. G. G. Sears, Boston.—p. 1160.
Case of Tetanus. W. Galvin, Blackinton.—p. 1161.
How Medicine Can Best Serve. G. W. Haigh, Worcester.—p. 1162.

Psychotherapy in Outpatient Work.—Peck finds it possible to carry out systematic and efficient psychotherapy in outpatient work when the medical personnel is interested in the procedure and the size of the clinic is not too great. Reliance must be placed chiefly on suggestion and persuasion. In many cases a superficial mental analysis aids in the determination of psychogenic mechanisms and is a valuable supplement to other forms of treatment. The degree of success in treatment compares favorably with that achieved in other chronic affections.

Extreme Ascites.—Sears cites a case of ascites in a man, aged 62, from whom 72 quarts of serum were withdrawn. The fluid reaccumulated, and a month later 70 quarts were removed. A third aspiration of almost exactly the same quantity was done four weeks later, after which the man became delirious, and died on the fourth day. A necropsy was not permitted.

California and Western Medicine, San Francisco

23: 673-800 (June) 1925

Status of Neurologic Surgery. H. C. Naffziger, San Francisco.—p. 705.
Surgical Treatment of Diseases of Colon. C. E. Phillips, Los Angeles.—p. 710.
Treatment of Cholecystitis. W. W. Boardman, San Francisco.—p. 714.
Prostatic Median Bar, Complications and Treatment. M. B. Wesson, San Francisco.—p. 720.
Development and Reestablishment of Breast Milk by Use of Dr. Abt's Electric Breast Pump. E. M. Tarr, Los Angeles.—p. 728.
*Lengthening Quadriceps Tendon for Stiff Knee. G. J. McChesney, San Francisco.—p. 732.
Metastatic Bone Marrow Carcinoma. L. C. Kinney, San Diego.—p. 734.
Chinese Herbalist and Medical Practice Act. C. B. Pinkham, San Francisco.—p. 737.

Operation for Stiff Knee.—McChesney describes an operation entailing no risk to important structures, which presents no especial difficulties and will give a flexion range sufficient for all practical purposes in life, and which gets rid of an ugly tiring limp and a position of the limb which is always awkward and in the way, as in sitting in a street car. The operation requires three weeks in bed, after which the patient can be up and about on crutches, and permits a return to light work within three months.

Colorado Medicine, Denver

22: 191-230 (June) 1925

Hay-Fever Plant Survey of City and County of Denver. J. J. Waring, Denver.—p. 194.
High Protein Diet and Intestinal Infection as Etiologic Factors in Arteriosclerosis. N. M. Alter, Denver.—p. 199.
*Bismuth Salicylate in Treatment of Syphilis. S. R. McKelvey, G. K. Dunklee and N. Mumey, Denver.—p. 205.
Preventive Medicine Versus Private Practice. J. A. Wenk, Colorado Springs.—p. 212.
Value of Radiation in Diseases of Cervical Lymph Glands. S. Withers, Denver.—p. 214.
Psychoneuroses and Profession. L. V. Tepley, Denver.—p. 217.
Medical Management of Gallbladder Diseases. M. Printz, Denver.—p. 220.

Bismuth Treatment of Syphilis.—A total of 3,085 injections of bismuth salicylate were given by McKelvey et al. to 218 patients, which lead them to arrive at the following conclusions: Bismuth is an adjunct in the treatment of syphilis and is above mercury, but below arsphenamin in its action. It is better tolerated than mercury. It is less painful than mercury, but causes some discomfort from injection. It is efficient in the so-called Wassermann fast cases. It will clear up primary and secondary manifestations more rapidly than mercury, more slowly than arsphenamin. It can be used in cases with marked renal involvement.

Florida Medical Association Journal, St. Augustine and Jacksonville

11: 213-239 (June) 1925

Encephalitis. B. R. Tucker, Richmond, Va.—p. 227.
Congenital Clubfoot. F. L. Fort, Jacksonville.—p. 231.

Georgia Medical Association Journal, Atlanta

14: 221-265 (June) 1925

Attributes of Heart's Action. W. W. Jarrell, Thomasville.—p. 227.
Treatment of Diabetes and Use of Insulin. T. E. Rogers, Macon.—p. 230.
Abdominal Diagnosis from General Practitioner's Standpoint. W. S. Cook, Albany.—p. 233.
Opaque and Nonopaque Bodies in Gastro-Intestinal and Respiratory Tracts. J. W. Landham, Atlanta.—p. 237.
Bronchial Spirochetosis; Cases. E. E. Murphey, Augusta.—p. 240.
Childhood Tuberculosis and Its Relation to Tuberculosis Problem. E. W. Glidden, Alto.—p. 245.
Fraternalism. H. J. Carswell, Waycross.—p. 248.

Illinois Medical Journal, Oak Park

67: 401-472 (June) 1925

Rickets. L. R. DeBuys, New Orleans.—p. 413.
Traumatic Rupture of Thoracic Aorta; Review of Fifty-Five Abdominal Injuries. L. P. Kuhn, Chicago.—p. 420.
*Intestinal Protozoa and Chronic Diseases with Reference to Chronic Arthritis. J. V. Barrow and E. L. Armstrong, Los Angeles.—p. 427.
Relation of Ethmosphenoiditis to Some Diseases of Eye, Ear and Other Organs. W. M. Thompson, Chicago.—p. 432.
Significance of Colon in Abdominal Distress. J. D. Milligan, Elgin.—p. 436.
Colitis. F. G. Dyas, Chicago.—p. 440.
Major Urologic Considerations. L. D. Smith, Chicago.—p. 442.
Posttraumatic Mental Disorder. C. F. Read, Chicago.—p. 447.
Treatment of Benign Uterine Hemorrhage with Radium. R. A. Scott, Evanston.—p. 455.
Correct Development of Growing Feet to Insure Health. S. C. Woldenberg, Chicago.—p. 458.
Clinical Clues of Value in Early Recognition of Pretuberculosis. M. V. Gunn, Bloomington.—p. 460.

Intestinal Protozoa in Chronic Arthritis.—Barrow and Armstrong stress the fact that the distribution of human protozoal infections is widespread. There is no one symptom by which their presence may be known clinically. They are associated with diseases exhibiting depressive and toxic syndromes as yet unexplained in medicine. They exist essentially in a chronic state. Their eradication is slow, tedious and at times uncertain as is the treatment of chronic diseases. Persistence in treatment with rational honest effort on the part of both physician and patient are necessary to get results.

Journal of Biological Chemistry, Baltimore

64: 1-227 (May) 1925

*Resistance of Antirachitic Substance in Cod Liver Oil to Reagents. C. E. Bills, Baltimore.—p. 1.
*Carbohydrate Metabolism of Tumors. I. Free Sugar, Lactic Acid, and Glycogen Content of Malignant Tumors. C. F. Cori and G. T. Cori, Buffalo, N. Y.—p. 11.
Electrolytic Modification of Gutzeit Method for Determination of Arsenic in Body Tissues. W. E. Lawson and W. O. Scott, Edgewood, Md.—p. 23.
Synthesis of 3, 4, 5-Triiodophenylpyrrolidone Carboxylic Acid, a Possible Isomer of Thyroxin. C. R. Harington, London, Eng.—p. 29.
Biochemistry of Acetone Formation from Sugars by Bacillus Acetoethylicum. H. B. Speakman, Toronto, Canada.—p. 41.
*Method of Obtaining from Veins Blood Similar to Arterial Blood in Gaseous Content. S. Goldschmidt and A. B. Light, Philadelphia.—p. 53.
Papain Lipase. M. Sandberg and E. Brand, New York.—p. 59.
Anthocyanin Formation in Helianthus Annuus. C. E. Sando, Washington, D. C.—p. 71.
*Determination of Small Amounts of Protein Nitrogen. E. R. Main and A. P. Locke, Chicago.—p. 75.
*Effect of Ultraviolet Irradiation on State of Serum Calcium. A. R. Moritz, Cleveland.—p. 81.
Blood Phosphates as Related to Carbohydrate Metabolism. A. Bollinger and F. W. Hartman, Detroit.—p. 91.
*Antiscorbutic Properties of Eggs. S. M. Hauge and C. W. Carrick, Lafayette, Ind.—p. 111.
Adequacy of Synthetic Diets for Growth of Chick. A. G. Hogan, N. B. Guerrant and H. L. Kempster, Columbia, Mo.—p. 113.
Metabolism of Imidazoles. L. Leiter, Chicago.—p. 125.
Combination of Phenol Red and Proteins. A. Grollmann, Baltimore.—p. 141.
*Cause of Ophthalmia in Rats Produced with Diets Containing Vitamin A. E. V. McCollum, N. Simmonds and J. E. Becker, Baltimore.—p. 161.
*Antirachitic Value of Irradiated Cholesterol and Phytosterol. II. Further Evidence of Change in Biologic Activity. A. F. Hess and M. Weinstock, New York.—p. 181.
*Id. III. Evidence of Chemical Change as Shown by Absorption Spectra. A. F. Hess and M. Weinstock, New York.—p. 193.
Modification of Bloor's Method for Determination of Cholesterol in Whole Blood or Blood Serum. G. E. Sackett, Kansas City, Mo.—p. 203.
Determination of Blood Sugar. S. R. Benedict, New York City.—p. 207.
Determination of Uric Acid in Blood. S. R. Benedict, New York.—p. 215.
Simple Method for Obtaining Cutaneous (Capillary) Blood from Infants and Adults for Colorimetric *p*H Determination. P. Drucker and G. E. Cullen, Copenhagen, Denmark.—p. 221.

Chemical Examination of Antirachitic Substances.—The first of a series of experiments on the chemical examination of antirachitic substances is reported on by Bills. It was found that the antirachitic vitamin in cod liver oil is not destroyed by hydrogen dioxid, hydrogen sulphid, sulphur dioxid, or liquor formaldehydi. It is readily destroyed by nitrous fumes, and slowly by direct steam or contact with mineral acids.

Carbohydrate Metabolism of Tumors.—The experiments reported on by Cori and Cori bring forward some evidence that tumor tissue in the living animal splits large amounts of glucose into lactic acid.

Gaseous Content of Blood from Veins.—A method is described by Goldschmidt and Light, and results of its use are presented, by which blood of arterial oxygen content, capacity and carbon dioxid content may be obtained from the veins on the back of the hand, after exposure to hot water.

Determination of Protein Nitrogen.—Main and Locke propose a spectrometric extension of the method of Folin and Denis for the estimation of small quantities of ammonia nitrogen. The extended method permits the use of samples containing as little as 0.005 mg. of protein nitrogen with fair accuracy and with great facility. The field of the method lies in those investigations where only minute quantities of nitrogenous material are available for analysis.

Effect of Ultraviolet Radiation on Serum Calcium.—No changes in the total calcium nor in the percentage of diffusible calcium of the blood serum of normal rabbits were observed by Moritz following ultraviolet irradiation in vitro or in vivo.

Antiscorbutic Properties of Eggs.—The potency of the egg, white and yolk separately, in relation to its prophylactic and therapeutic value in scurvy, was tested by Hauge and Carrick. Egg whites fed to guinea-pigs in quantities as large as 20 c.c. daily delayed the symptoms of scurvy no longer than did the basal ration. Egg yolk proved equally ineffective when given at the rate of 15 c.c. daily. The therapeutic action of egg portions was also negative. All of the guinea-pigs were necropsied, and the presence of scurvy was confirmed.

Cause of Dietetic Ophthalmia in Rats.—Further studies are described by McCollum, Simmonds and Becker on the conditions under which ophthalmia appears in rats taking a diet containing an adequate amount of vitamin A when excessive amounts of certain salts are contained in the diet. It is demonstrated that the ophthalmia cannot be induced by feeding excessive amounts of any one element or iron. The total amount of a salt mixture and its composition, which is included, may be the determining factor as to whether ophthalmia will develop. A former surmise that the ophthalmia was due to excessive amounts of chlorin or possibly of sodium in the diet is proved untenable. As a possible explanation of the experimental results recorded the dual nature of vitamin B is suggested.

Antirachitic Value of Irradiated Cholesterol.—Dry milk, flour and spinach was rendered antirachitic by Hess and Weinstock by radiations from the quartz mercury vapor lamp. This potency was maintained by the spinach after it had been boiled for one-half hour. Oleic acid and egg phosphatid cannot be activated by this means. Irradiated cholesterol was found to prevent rickets when given by the subcutaneous route. A series of tests with selective filters showed that the radiations which render cholesterol active biologically are similar in their wave lengths to those which have been found to protect animals against rickets when they are directly exposed to the rays. Irradiated cholesterol is effective in preventing the rickets brought about by a diet either low in phosphorus or low in calcium. Skin which ordinarily possesses no antirachitic potency develops this quality after irradiation with ultraviolet rays.

Chemical Change in Irradiated Cholesterol.—By means of special absorption tests a chemical change was demonstrated by Hess and Weinstock in cholesterol which had been endowed with antirachitic potency by ultraviolet irradiation. This activated cholesterol absorbs ultraviolet radiations to a less degree than does ordinary cholesterol, an effect which is intensified with increasing degrees of irradiation. If, however, irradiation is prolonged for many hours the activated cholesterol becomes less transparent than even non-irradiated cholesterol. This comparatively opaque product is of a yellowish color and has a lowered melting point.

Journal of Clinical Investigation, Baltimore

1: 403-495 (June) 1925

Factors in Dehydration Following Pyloric Obstruction. J. L. Gamble and S. G. Ross, Baltimore.—p. 403.
Resistance of Immature Erythrocytes to Heat. R. Isaacs, B. Brock and G. R. Minot, Boston.—p. 425.

Plasma Proteins in Relation to Blood Hydration. I. In Normal Individuals and in Miscellaneous Conditions. J. P. Peters, A. J. Eisenman and H. A. Bulger, New Haven, Conn.—p. 435.

*Plasma Proteins in Relation to Blood Hydration. II. In Diabetes Mellitus. J. P. Peters, H. A. Bulger and A. J. Eisenman, New Haven, Conn.—p. 451.

Iodin Studies. I. Avidity of Thyroid for Various Iodin Compounds in Vitro. I. M. Rabinowitch and A. B. Frith, Montreal, Canada.—p. 473.

Effect of Some Pathologic Conditions on Dyspnea During Exercise. I. Artificial Stenosis. A. W. Hewlett, J. K. Lewis and A. Franklin, Stanford University, Calif.—p. 483.

Plasma Proteins in Diabetes Mellitus.—Peters, Bulger and Eiseman report on their observations of the plasma proteins of patients with diabetes mellitus of varying degrees of severity, studied at different stages of the disease. In mild diabetes unassociated with ketosis or malnutrition the plasma proteins are usually normal. In severe diabetes associated with chronic malnutrition, the plasma proteins are usually found reduced. In conditions of severe diabetic toxemia with ketosis the blood becomes concentrated by loss of water. Under these circumstances the plasma proteins appear relatively high. The tissue dehydration which is so striking a part of the picture of diabetic toxemias appears to be closely related to the acidosis. Restoration of the alkali reserve is attended by retention of fluid in the body. True diabetic edema seldom if ever occurs in the presence of acidosis. A definite alkalosis is, however, not essential to the production of edema. The fact that diuresis can be induced by the production of acidosis indicates that the acid-base equilibrium also plays its part in the etiology of the edema. It is suggested that the state of malnutrition may render the subject peculiarly susceptible to the effects of alkali. The common association of low plasma proteins with diabetic edema is probably not one of cause and effect but is a result of the fact that both phenomena are characteristic of severe diabetes without acidosis.

Journal of Comparative Psychology, Baltimore

5: 205-291 (June) 1925

Quantitative Demonstration of Animal Drive. J. F. Dashiell.—p. 205.

Comparison of White and Negro Children by Terman and Yerkes-Bridges Revisions of Binet Tests. D. Sunne, New Orleans.—p. 209.

Emotional Reactions. III. Systolic Blood Pressure and Inspiration-Expiration Ratios. C. Landis and R. Gullette, Minneapolis.—p. 221.

Time Discrimination in White Rats. C. F. Sams and E. C. Tolman.—p. 255.

Thermolinetics of Crematogaster Lineolata (Say). K. C. Pratt, Columbus, Ohio.—p. 265.

Comparisons of White and Negro Children in Certain Ingenuity and Speed Tests. J. Peterson, L. H. Lanier and H. M. Walker.—p. 271.

Hearing of Tortoises. R. Kuroda, Niigata, Japan.—p. 285.

Journal of Industrial Hygiene, Baltimore

7: 185-246 (May) 1925

Lighting in Industries. P. W. Cobb, Cleveland.—p. 185.

Engineering-Hygienic Aspects of Dust Elimination in Mines. D. Harrington, Salt Lake City, Utah.—p. 199.

Unhealthy Barges. W. F. Dearden, England.—p. 215.

Coal Miner: Health, Diseases, and General Welfare. E. L. Collis.—p. 221.

7: 247-292 (June) 1925

Two Years of Industrial Ophthalmology at Pullman Car Works. H. P. Davidson, Chicago.—p. 247.

Recommendations for Controlling Health Hazards in Garages and Automobile Repair Shops. G. M. Burnham, Chicago.—p. 254.

Determination of Suspensoids by Alternating-Current Precipitations. P. Drinker and R. M. Thomson, Boston.—p. 261.

Determination of Small Amounts of Zinc in Materials of Organic Nature: Michrochemical Method Based on Fluorescence of Zinc Salts with Urobilin. R. E. Lutz, Boston.—p. 273.

Journal of Nervous and Mental Disease, New York

61: 561-676 (June) 1925

Somatic Pathology and Psychopathology at Encephalitis Crossroad. S. E. Jelliffe, New York.—p. 561.

Nature of Abdominal Reflexes. M. Astwazaturow, Leningrad, Russia.—p. 587.

*Extensive Brain Hemorrhage. N. W. Winkelman, Philadelphia, and J. L. Eckel, Buffalo.—p. 593.

Extensive Brain Hemorrhage Not Immediately Fatal.—From a study of thirty cases, with necropsy, Winkelman and Eckel feel that cerebral hemorrhage does not always cause immediate death, that is, in less than one hour, even when the hemorrhage is into the pons or into the ventricles.

Journal of Radiology, Omaha

6: 173-212 (May) 1925

Ultraviolet Therapy in Surgical and Gynecologic Work. A. D. Willmoth, Louisville, Ky.—p. 173.

Mercury Ion in Gynecology. G. B. Massey, Philadelphia.—p. 180.

Indications for Use of Ultraviolet Energy in Medicine. L. C. Donnelly, Detroit.—p. 183.

Roentgen-Ray Diagnosis of Chronic Pancreatitis and Its Relation to Common Skin Diseases. W. A. Quimby, Wheeling, W. Va.—p. 186.

Gallbladder Disease Treated by Sine Wave and Diathermia. J. G. Walsh, Woodbine, Iowa.—p. 188.

6: 213-255 (June) 1925

Selective Action of Dyes Used in Medicine. E. C. Folkmar, Washington, D. C.—p. 213.

Roentgen-Ray Therapy of Infective Tonsils and Adenoids. J. H. Wesley, Newmarket, Ontario.—p. 221.

Epithelioma of Face, Head and Neck. A. L. Yocom, Jr., Charlton, Iowa.—p. 224.

Pulmonary Tuberculosis and Tuberculous Peritonitis Treated by Actinic Ray. J. G. Walsh, Woodbine, Iowa.—p. 229.

Radiation in Female Pelvis. D. Y. Keith, Louisville, Ky.—p. 232.

Kansas Medical Society Journal, Topeka

25: 169-206 (June) 1925

Beating the Quack. A. O'Donnell, Ellsworth.—p. 169.

Modern Pathology in General Practice. H. R. Wahl, Kansas City, Kan.—p. 172.

Cause and Treatment of Arterial Hypertension. R. H. Major, Kansas City, Kan.—p. 177.

Kentucky Medical Journal, Bowling Green

23: 255-312 (May) 1925

Case of Intra-Ocular Melanosarcoma. R. W. Blesoe, Covington.—p. 264.

Tendon Transplantation of Eye Muscles. J. H. Hester, Louisville.—p. 265.

Lateral Sinus Thrombosis. C. T. Wolfe, Louisville.—p. 266.

Milk Injections in Eye Infections. R. H. Cowley, Berea.—p. 270.

Trachoma. L. P. Molloy, Paducah.—p. 272.

Tonsillectomy Under Local Anesthesia. O. Dulaney, Louisville.—p. 273.

Contraindications for Operation of Senile Cataracts: Fatality. F. Phinizy Calhoun, Atlanta.—p. 275.

Suggestions on Threatened Dangers. J. A. Stucky, Lexington.—p. 270.

Poliomyelitis Associated with Hysterical Manifestations: Case. J. J. Moren, Louisville.—p. 280.

Pupils in Diagnosis. A. Pfingst, Louisville.—p. 282.

Vagino-Rectal Anomaly; Sigmoidal Diverticulitis: Case. L. Frand, Louisville.—p. 287.

Preventive Medicine in First Year of Life. J. W. Burce, Louisville.—p. 288.

Postoperative Intestinal Obstruction. G. A. Hendon, Louisville.—p. 292.

Relapsing Purpuric Eruption. B. C. Frazier, Louisville.—p. 294.

Results of Treatment of Tuberculosis at Hazelwood. S. W. Bates, Louisville.—p. 295.

Factors Influencing Increase of Cancer in Kentucky. F. W. Rankin, Lexington.—p. 301.

Radiotherapy of Tubercular Adenitis. D. Y. Keith and J. P. Keith, Louisville.—p. 304.

Michigan State Medical Society Journal, Grand Rapids

24: 275-344 (June) 1925

Management of Goiter—Primary Hyperthyroidism or Exophthalmic and Adenomata with Hyperthyroidism or Thyrotoxic Type. C. D. Brooks, Detroit.—p. 275.

Human Milk; Factors in Its Production. B. R. Hoobler, Detroit.—p. 279.

Problems in Gynoplastic Surgery. A. M. Campbell, Grand Rapids.—p. 280.

*Prenatal Maternal Heart. A. E. van Nest, Detroit.—p. 284.

Trend of Health Education Among School Children. M. Chayer, Saginaw.—p. 286.

Significance of Colloidal Properties of Gelatin in Special Dietaries. T. B. Downey, Pittsburgh.—p. 289.

Clinical Significance of Acidosis and Alkalosis. D. J. Leithauser, Detroit.—p. 291.

Repetition of Tubal Pregnancy in Opposite Tube—Double Vagina. C. A. van Dusen and A. E. Lamley, Blissfield.—p. 293.

*Intestinal Bacteriophage or Lytic Principle in Scarlet Fever and Chickenpox. D. M. Cowie, J. P. Parsons and H. Poncher, Ann Arbor, Mich.—p. 294.

Prenatal Maternal Heart.—During 1923 at Station 1 of the prenatal clinic of the Detroit Department of Health, with an attendance of 1,347 new prenatal patients there were 151 heart conditions of various severity. Functional murmurs were present in eighty cases; mitral regurgitation, twenty-five cases; mitral stenosis, five cases, and a lesser number of cases of other conditions.

Bacteriophage in Stools of Scarlet Fever Patients.—Cowie, Parsons and Poncher find that a bacteriophage or lytic prin-

ciple develops quite uniformly and characteristically in the stools of scarlet fever patients, seldom in those of chickenpox patients. In scarlet fever the lytic principle was active for *B. coli*, *B. dysentery* (Shiga and Flexner) *B. typhosus*, *B. paratyphoid* A and B. It had no lytic effect on hemolytic streptococci isolated from the throats of scarlet fever patients.

Military Surgeon, Washington, D. C.

56: 641-767 (June) 1925

Tactics of Medical Detachment. T. L. Rhoads.—p. 641.
Infection of War Wounds by Diphtheria and Diphtheroids. W. M. Brickner.—p. 683.
Cytologic Diagnosis of Dysenteric Conditions and Its Application in Military Service. G. R. Callender.—p. 686.
Reminiscences of Early Days on Isthmus. D. N. Carpenter.—p. 700.
New Motor Ambulance Body to Carry Six Litter Cases. J. P. Fletcher. —p. 708.
Venereal Prophylaxis in Italian Army. F. Piccininni.—p. 737.
1924 Annual Physical Examination of Officers on Duty in Philippine Islands. J. F. Siler.—p. 738.

Missouri State Medical Association Journal, St. Louis

22: 203-240 (June) 1925

Essentials of Gynecologic Examination. R. S. Tilles, St. Louis.—p. 203.
Obstetric Problems. W. C. Gayler, St. Louis.—p. 206.
Pertinent Facts About Thyroid. F. Reder, St. Louis.—p. 208.
Subungual Exostoses. J. G. Probstein and B. Brooks, St. Louis. —p. 211.
Use of Magnesium Sulphate with Morphin-Hyoscin in Labor. R. Paddock, St. Louis.—p. 214.
*Importance of Repeated Examinations of Sputum and Use of Antiformin Method. L. Schlenker, St. Louis.—p. 216.
Brain Abscess of Otitic Origin. W. D. Black, St. Louis.—p. 218.
Significance of Colloidal Properties of Gelatin in Special Dietaries. T. B. Downey, Pittsburgh.—p. 221.

Importance of Repeated Examination of Sputum.—By repeatedly examining specimens of sputum, taken at intervals, tubercle bacilli were found by Schlenker in fifteen cases in which the first specimen examined showed no bacilli. Antiformin digestion of the sputum followed by centrifugalization and examination of the sediment revealed tubercle bacilli which could not be seen in the simple smear in twenty-two cases. The antiformin method was more efficient by 9 per cent. It was particularly efficient in patients who expectorated few bacilli and these at intervals.

Nebraska State Medical Journal, Norfolk

10: 193-236 (June) 1925

Medical Education and Family Doctor. P. Findley, Omaha.—p. 193.
Epidemiology of Streptococcus Sore Throat. J. J. Keegan, Omaha. —p. 200.
Oral Focal Infections Related to Systemic and Degenerative Diseases. L. J. Swanbom, Scottsbluff.—p. 203.
Modern Aspects of Nutrition. V. E. Levine, Omaha.—p. 208.
Poliomyelitis from Standpoint of Neurologist. G. E. Neuhaus, Omaha. —p. 211.
Carcinoma of Vulva: Case. M. Emmert, Omaha.—p. 216.
Surgeon's Relation to Newspaper. J. W. Duncan, Omaha.—p. 218.
Group Practice in Smaller Communities. D. D. King, York.—p. 220.
Fractures of Lower Third of Leg. J. E. M. Thomson, Lincoln.—p. 222.

New Jersey Medical Society Journal, Orange

22: 189-230 (June) 1925

Recognition of Early Renal Disease. N. B. Foster, New York.—p. 189.
Clinical Microscopy of Living Eye. E. J. Marsh, Paterson.—p. 195.
Influence of Physical Causes on Moral Faculties. G. K. Dickinson, Jersey City.—p. 200.
Meningitis and Brain Abscess. T. R. Chambers, Jersey City.—p. 209.

New York State Journal of Medicine, New York

25: 755-824 (June) 1925

Doctor of Future. G. E. Vincent, New York.—p. 758.

Northwest Medicine, Seattle

24: 211-260 (May) 1925

*Technic for Simultaneous Implantation of Right and Left Ureters into Pelvic Colon Which Does Not Obstruct Ureters or Disturb Kidney Function. R. C. Coffey, Portland, Ore.—p. 211.
Arguments in Favor of Parasitic Etiology of Carcinoma. M. J. Scott, Butte, Mont.—p. 215.
Sacral Anesthesia. A. A. Matthews, Spokane, Wash.—p. 220.
Block Anesthesia in Nasal Surgery. J. G. Parsons, Lewistown, Mont. —p. 223.
Treatment of Tuberculosis of Spine on Bent Bradford Frame. H. J. Wyckoff, Seattle.—p. 227.
*Treatment of Psoriasis. W. H. Goeckerman, Rochester, Minn.—p. 229.
Hemorrhagic Pachymeningitis; Six Cases. G. W. Swift, Seattle.—p. 232.
Diagnosis and Treatment of Peptic Ulcer. O. M. Nisbet, Portland, Ore. —p. 235.
Diagnosis and Treatment of Female Sterility. R. E. Watkins, Portland, Ore.—p. 239.
Prolongation of Life. M. W. Thewlis, New York.—p. 245.
Child Hygiene and Physician. G. J. Mohr, Seattle.—p. 247.
Syphilitic Register. W. J. Pennock, Spokane.—p. 248.

Transplantation of Ureters.—Experimental and clinical observation teaches that for a period of time, varying from three to seven days, after the implantation of a duct into the intestine, the edema in the field of operation blocks the duct and therefore obstructs the function of the organ. Therefore, a fundamental point in the technic of implantation of both ureters at the same sitting is that the urine shall be conducted past the field of operation by a noncollapsible tube until the local postoperative edema shall have subsided. Usually this is from three to six days in case of a ureter. This fundamental necessity is met in the technic described by Coffey. He places rubber tubes in the ureteral lumen.

Treatment of Psoriasis.—Goeckerman favors the use of White's crude coal-tar ointment, applied to the patches for twenty-four hours, and removed with olive oil, postponing vigorous cleansing efforts until after the lesions have been exposed to the ultraviolet quartz light. The light is usually applied for one minute at a distance of 30 inches, and the time of exposure is increased one minute daily for three or four days. If the patient then shows no signs of reactivity, the time is rapidly increased and the distance decreased. An effort is made to avoid any marked reaction, but tanning should be produced as rapidly as possible. The use of the crude coal-tar preparation alone, or that of the quartz lamp alone, has not given results comparable to the combined use of the two agents.

24: 261-308 (June) 1925

Varying Mechanism of Uterine Bleeding. E. Novak, Baltimore.—p. 261.
Diagnosis and Treatment of Diabetes Mellitus. L. T. Nelson, Portland, Ore.—p. 265.
Glucose Metabolism. C. H. Hofrichter, Seattle.—p. 271.
Few Why's in Dietetics. C. V. Genoway, Boise, Idaho.—p. 277.
Gastric Carcinoma. J. M. Blackford, Seattle.—p. 280.
*Stricture of Rectum as an Indirect Cause of Pellagra; Case. T. M. Joyce and D. B. Seabrook, Portland, Ore.—p. 284.
*Cardiolysis for Adherent Pericardium. A. O. Loe, Seattle.—p. 285.
Indications and Technic for Removal of Excessive Subcutaneous Abdominal Fat. A. P. Heineck, Chicago.—p. 287.
General Aspects of Public Charity and Problems Involving Medical Profession. C. J. Lynch, Yakima, Wash.—p. 291.

Stricture of Rectum as Indirect Cause of Pellagra.—In the case reported by Joyce and Seabrook the lesion did not interfere with assimilation but did, because of its nature, cause the patient voluntarily to choose an inadequate diet which eventually brought on pellagra.

Cardiolysis for Adherent Pericardium.—The clinical result of cardiolysis for adherent pericardium in the case reported by Loe has proven very good. Such a favorable outcome was no doubt due to the fact that it was a very early case, with recent signs of incipient cardiac incompetency; when the mechanically embarrassing structures were removed, the heart promptly recovered through its efficient cardiac reserve.

Occupational Therapy and Rehabilitation, Baltimore

4: 171-234 (June) 1925

Occupational Therapy for Orthopedic Patient Crippled by Chronic Diease. L. T. Swaim and M. Taylor, Baltimore.—p. 171.
Orders for Treatment and Procedure. M. Taylor, Boston.—p. 177.
Two Practical Suggestions for Occupying Desperate Cases. S. E. Tracy. —p. 181.
Kindergarten Class in Mental Hospital. M. E. Gustafson, Chicago. —p. 185.
Hospital Pre-Industrial Shop. T. B. Kidner.—p. 187.

Oklahoma State Medical Association Journal, Muskogee

18: 120-153 (June) 1925

For Good of Order. P. P. Nesbitt, Muskogee.—p. 120.
Thrombosis; Coronary Thrombi. H. T. Ballantine, Muskogee.—p. 122.
Chlorin Gas in Respiratory Diseases. J. C. MacDonald, Oklahoma City.—p. 125.
Intracranial Hemorrhage in New-Born. C. M. Pounders, Oklahoma City.—p. 126.

Surgery of Prostate. L. A. Hahn, Guthrie.—p. 128.
Achievements of Modern Urology. E. L. Cohenour, Tulsa.—p. 130.
Significance of Colloidal Properties of Gelatin in Special Dietaries. T. B. Downey, Pittsburgh.—p. 132.

Philippine Islands Medical Association Journal, Manila

5: 137-156 (May) 1925

Aneurysm of Heart; Case. M. P. Mendoza-Guazon.—p. 137.
Medicolegal Significance of Rupture of Heart. P. Anzures and S. de los Angeles.—p. 141.
Lipoma of Descending Colon, Sigmoid Flexure, Rectum and Corresponding Mesentery. C. D. Franco.—p. 144.

Rhode Island Medical Journal, Providence

8: 87-102 (June) 1925

Congenital Myxedema. L. I. Kramer, Providence.—p. 87.
Roentgen Rays in Treatment of Various Inflammatory Conditions. S. Albert, Providence.—p. 90.

Southwestern Medicine, Phoenix, Ariz.

9: 213-254 (June) 1925

Surgery of Tuberculous. J. D. Brooks, Fort Whipple, and C. E. Yount, Prescott.—p. 213.
Pulmonary Tuberculosis Complicated by Asthma. E. W. Phillips, Phoenix.—p. 215.
Primary New Growths of Lung. V. Randolph, Phoenix.—p. 218.
Intestinal Obstruction. V. M. Gore, Tucson.—p. 220.
Infected Tonsils as Cause of Thyrotoxicosis. H. T. Bailey, Phoenix.—p. 223.
Significance of Colloidal Properties of Gelatin in Special Dietaries. T. B. Downye, Pittsburgh.—p. 225.
Bronchiectasis. R. J. Callander, Tucson.—p. 226.
Malaria Control by Quinin. E. C. Houle and H. A. Harris, Sonora, Mexico.—p. 229.
Tularemia Infection of Conjunctiva. A. Martin, Phoenix.—p. 232.
Treatment of Syphilis. W. A. Pusey, Chicago.—p. 232.

Virginia Medical Monthly, Richmond

52: 69-138 (May) 1925

Tetany with Thymus Gland Enlargement. L. Davis, Roanoke.—p. 69.
Roentgen-Ray Treatment of Enlarged Thymus in Children. J. T. McKinney, Roanoke.—p. 71.
Clinical Significance of Changes in Blood Chemistry. W. H. Higgins, Richmond.—p. 76.
Surgical Treatment of Unilateral Pulmonary Tuberculosis. S. S. Gale, Roanoke.—p. 80.
Delayed Secondary Hemorrhage Following Tonsillectomy. J. W. White, Norfolk.—p. 85.
Rational Treatment of Pneumonia. W. T. Vaughan, Richmond.—p. 88.
*Eclampsia Nutans (Salaam Convulsions); Case. S. Newman, Danville.—p. 92.
Vincent's Angina or Ulceromembranous Tonsillitis. W. M. Bowman, Petersburg.—p. 94.
Case of Enormously Enlarged Esophagus. B. P. Seward, Richmond.—p. 98.
Roentgen-Ray Diagnosis in Gastric and Duocenal Ulcer. L. F. Magruder, Norfolk.—p. 100.
Medical Profession. W. E. Warren, Williamston, N. C.—p. 102.
Massive Excision of Subcutaneous Abdominal Fat. A. P. Heineck, Chicago.—p. 106.
Traumatic Rupture of Intestine; Case. B. F. Eckles, Richmond.—p. 112.
Management of Pregnancy. C. P. Obenschain, New Hope.—p. 113.
Ethylene. I. H. Goldman, Richmond.—p. 117.
*Case of Bilateral Tubal Pregnancy. H. E. Jordan and I. A. Bigger, University.—p. 116.
Lesson Taught by Over Two Hundred Thousand Injections of Arsenicals. T. L. Driscoll, Richmond.—p. 117.

Eclampsia Nutans.—Newman reports the case of a child, aged 18 months, which when aroused, sat up on the bed and fell over on her face in a series of six or eight motions, extending the upper arms somewhat rigidly outward and backward. The child did not pass any urine or feces during or after this convulsion or spasm.

Bilateral Tubal Pregnancy.—In the case reported by Jordan and Bigger the right tube contained a well preserved, apparently normal embryo of 13 mm. length attached by a clear, delicate umbilical cord to a compact mass of normal chorionic villi. The left tube had ruptured. No embryo was recovered from this tube. The embryo had probably suffered resorption, as had also the placenta, under pressure of the blood clot. Evidence present indicated that the pregnancies in both tubes were of approximately the same age, about seven weeks, and the result of a coincident fertilization. The patient was 31 years of age, and the mother of six children. Nothing in the clinical history, nor the anatomic conditions observed at operation, furnished the slightest clue to account for the tubal implantations.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

30: 155-196 (May) 1925

Direct Measurement of Radiation Received by Tissues. L. Mallet.—p. 155.

British Medical Journal, London

1: 1065-1114 (June 13) 1925

Problems of Thyroid Disease. R. McCarrison.—p. 1065.
Duodenal and Gastric Ulceration. T. P. Dunhill.—p. 1069.
*Comparison of Dried, Evaporated and Fresh Cow's Milk. G. A. Hartwell.—p. 1073.
*Etiology of Pernicious Anemia. A. C. Alport.—p. 1075.
*Gallstones in Adolescents. M. A. Key.—p. 1077.
Bilateral Twisted Ovarian Cysts. J. A. Prichard.—p. 1077.

Comparison of Dried, Evaporated and Fresh Cow's Milk.—Hartwell's experiments lead her to conclude that dried and evaporated milks possess quite different dietetic values, and that the dried milk approximates more closely to fresh cow's milk than does evaporated milk.

Etiology of Pernicious Anemia.—The fact of importance which arises out of Alport's experiments is that an extract can be obtained from blood by means of the alcohol-fractional precipitation method. The substance is freely soluble in water, is nontoxic, and apparently has some effect in increasing blood formation. A similar effect was observed on giving a series of intravenous injections to a patient with pernicious anemia in a remission stage.

Gallstones in Adolescents.—Key reports the case of a girl, aged 15, who had an acute cholecystitis. On opening the gallbladder, thickened bile with 150 small faceted stones and two larger ones, measuring one-fourth and one-half inch, respectively, were found.

Calcutta Medical Journal

20: 363-414 (April) 1925

Antagonistic Action of One Chemical Substance Against Another as Regards Their Effects on Microbes in Vitro. H. Ghosh.—p. 363.
Surgery of Ancient Hindus. S. K. Ray.—p. 372.
Medical Examination of Students of Presidency College, 1924. J. N. Maitra.—p. 382.
"Atrophia Cutis Idiopathica Progressive"; Case. A. Gupta.—p. 386.
Jaundice Showing Round Worms in Liver and Gallbladder. J. N. Maitra.—p. 400.
Acute Streptococcal Nephritis. S. C. Bose.—p. 391.
Case of Gallstone Colic. S. C. Bose.—p. 394.

Glasgow Medical Journal

21: 229-388 (June) 1925

Acute Abdomen. J. Ritchie.—p. 329.
Acute Abdomen. W. W. Galbraith.—p. 338.
*Undescended Cecum. A. B. MacLean.—p. 352.
Dental Focal Infection and Its Diagnosis by Roentgen Rays. C. Read.—p. 356.
Lymphatics of Heart: Hunterian Memorandum. D. M. Blair.—p. 363.

Undescended Cecum.—The incidence of undescended cecum for infants is given by MacLean as 6 per cent. but the adult incidence is probably less, since in infants the abdominal viscera have by no means reached the final adult position. This conclusion is based on 1,050 necropsies on infants for the most part under 3 months of age.

Indian Journal of Medical Research, Calcutta

12: 609-829 (April) 1925

*Rat-Bite Fever. M. J. Parmanand.—p. 609.
*Lathyrism. I. L. A. P. Anderson, A. Howard and J. L. Simonsen.—p. 613.
Pathogenic Material Examination. W. F. Harvey.—p. 645.
*Quantity of Urea Stibamine, "471" (Von Heyden) and Stibamine Glucoside Required for Complete Treatment of Kala-Azar. E. D. W. Greig and S. Kundu.—p. 679.
Two Cases of Kala-Azar Resistant to Treatment. E. D. W. Greig and S. Kundu.—p. 689.
*Glycosuria and Blood Sugar Content in Kala-Azar. E. D. W. Greig and S. Kundu.—p. 695.
Indian Species of Genus Phlebotomus. XI. Rôle of These Insects as Carriers of Disease. J. A. Sinton.—p. 701.
Economical Use of Alum in Mechanical Filters. A. D. Stewart and R. S. V. G. Raju.—p. 731.

*Chemotherapy of Antimonial Compounds in Kala-Azar Infection. XIV. Cases of Kala-Azar Treated with Urea Stibamine During Course of Thirty-Two Hours to Seven Days. U. N. Brahmachari and B. B. Maity.—p. 735.
Simple Method of Breeding Sandflies. R. O. A. Smith.—p. 741.
New Endemic Focus of Kala-Azar in Southern India. J. Cunningham and S. R. Pundit.—p. 743.
*Environment Associated with Kala-Azar Prevalence in Calcutta. L. E. Napier.—p. 755.
*Rôle of A. Rossii as "Carrier" of Malaria. C. A. Gill.—p. 773.
*Commercial Preparation of Neutral Soft Soap. A. D. Stewart and N. L. Banerjee.—p. 783.
Indian Species of Genus Phlebotomus. XII. Phlebotomus Argentipes Annandale and Brunetti, 1908. J. A. Sinton.—p. 789.
Id. XIII. Methods of Collection and Preservation. J. A. Sinton.—p. 801.
Effect of Formalin on Snake Venom. I. Diminution of Toxicity of Cobra Venom. C. Martin.—p. 807.
"Blood Meal" of Phlebotomus Argentipes Identified by Precipitin Antiserums. R. B. Lloyd, L. E. Napier and R. O. A. Smith.—p. 811.

Spirochetes in Rat Bite Fever.—The spirochetes found by Parmanand in his Bombay cases of rat bite fever are morphologically identical with those of the Japanese. Unlike other spirochetes, they are difficult to detect by the dark ground illumination method. It is more easy to demonstrate them by staining methods than by dark illumination. The lesser bandicoot (*N. bengalensis*) is the chief reservoir of infection in Bombay. Spirochetes isolated from naturally infected rats were morphologically indistinguishable from those isolated from human cases of rat bite fever.

Lathyrism.—The seeds of khesari (*Lathyrus sativus* L.) have been found, on chemical examination made by Anderson, Howard and Simonsen to be free from substances of an alkaloidal nature. An examination of the weeds which contaminate khesari has proved that akta (*Vicia sativa* L. var. *angustifolia*) contains bases showing alkaloidal properties. Two such bases, vicine and divicine, and a cyanogenetic glucoside vicianin, have been isolated, prepared in the pure state, and used in inoculation experiments on animals. Divicine, which occurs in akta in combination with a sugar as the glucosid vicine, produces, on inoculation in guinea-pigs, a characteristic and fatal disease. Akta, when fed to ducks, causes death. In monkeys, it produces a very characteristic train of symptoms affecting the nervous and muscular systems. Though certain of the symptoms occurring in monkeys fed on diets containing akta have been described in cases of human lathyrism, it is not yet possible to state, in the absence of pathologic proof, that akta is the cause of lathyrism in man.

Treatment of Kala-Azar by Urea Stibamine.—The amount of urea stibamine required for a complete treatment of kala-azar, according to Greig and Kundu, varies with the age of the patient from 2 to 6 gm., the smaller doses being given to young patients and the larger ones to older patients.

Blood Sugar in Kala-Azar.—Observations made by Greig and Kundu on the blood sugar content in kala-azar show this to be rather low, especially in cases with marked enlargement of the liver.

Urea Stibamine in Kala-Azar.—Brahmachari and Maity cite twenty-seven cases of kala-azar collected from various sources in which a cure was brought about in from thirty-two hours to seven days after treatment with urea stibamine.

Sandfly Transmits Kala-Azar.—On the whole, the balance seems to be slightly in favor of the sandfly as the transmitter of kala-azar, as far as the survey made by Napier is concerned, and, although different varieties have different feeding habits, the sandfly is better known as a human blood feeder than either the culicoides or plant-sucking bugs. The infrequency of the occurrence of the disease among better class Europeans living in the sandfly zone could easily be accounted for by the fact that they almost always live in light, airy rooms and, for a greater part of the year, under electric fans.

Anopheles Rossii Does Not Carry Malaria.—Under experimental conditions *A. rossii* Giles failed to become infected when fed on cases of malignant tertian malaria, while "control" experiments with *A. stephensii* and *A. culicifacies* yielded positive results.

Neutral Soft Soap.—Stewart and Banerjee assert that a cheap and practically inodorous soft soap can be manufactured from fish oil by running the oil into an excess of hot potassium hydrate lye gradually and diluting, boiling the mixture and subsequently blowing air through it. The excess of alkali in the soap can easily be neutralized by adding ammonium chlorid, 28 per cent. in excess of the theoretical amount.

Indian Medical Research Memoir, Calcutta

3: 1-105 (Dec.) 1924

Provisional List and Reference Catalogue of Anophelini. S. R. Christophers.—p. 1.

Journal of Tropical Medicine and Hygiene, London

28: 185-200 (May 15) 1925

Yellow Fever Research, 1918-1924. H. Noguchi.—p. 185.
British Indians and Bilharzia Disease. F. G. Cawston.—p. 193.

28: 201-216 (June 1) 1925

Immunologic Relationships of Leptospira Group of Spirochetes. T. Battistini.—p. 201.
Tropical Otolaryngology Especially in Philippines. A. S. Fernando and F. Nicholas-Fernando, Manila.—p. 202.
Prophylaxis in Malaria. H. A. Spencer.—p. 207.

Lancet, London

1: 1279-1330 (June 20) 1925

Local Public Health Administration. A. Newsholme.—p. 1279.
Interpretation of Electromyogram. E. D. Adrian.—p. 1282.
Problem of Malignancy. A. E. Barclay.—p. 1286.
Cutaneous Myiasis in Man Caused by Musca Domestica. W. S. Patton and H. A. Cookson.—p. 1291.
Artificial Induction of Leukocytosis. B. Ferguson and G. R. S. Thomas.—p 1292

Medical Journal of Australia, Sydney

1: 527-554 (May 23) 1925

"Aspects of Infantile Paralysis" C. P. B. Clubbe.—p. 527.
Epidemiology and Administrative Control of Anterior Poliomyelitis. R. Dick.—p. 536.
Two Cases of Katatonic Stupor. E. J. T. Thompson.—p. 541.
Case of Anergic Stupor. J. Bentley.—p. 542.

1: 555-580 (May 30) 1925

Fractures of Lower Extremity. G. Bell.—p. 555.
Possibilities of Cancer Research. W. Moppett.—p. 560.
Counterirritation and Increased Visceral Function. F. Trinca.—p. 564.
Schmerz Hook in Fracture of Lower End of Femur. R. H. Bridge.—p. 565.
Traumatic Nonjacksonian Epilepsy. A. Murphy.—p. 566.
Myxomatous Neoplasm of Mastoid Region. H. H. Johnston.—p. 566.
Pneumococcal Arthritis. P. L. Hipsley.—p. 567.

Naval Medical Association Bulletin, Tokyo, Japan

November, 1924

Dietetic Treatment of Severe Forms of Diabetes. T. Yukimori.—p. 1.
Energy Metabolism in Various Kinds of Work Assigned for Raw Recruits in Japanese Navy. M. Kikuchi and T. Matsuda.—p. 1.
Fracture of Tarsus. K. Kuroiwa and R. Suzuki.—p. 2.
*Dysenteric Cases Admitted into Sasebo Naval Hospital in 1923. B. Yamaguchi.—p. 2.
Vitamin Content in "Nukamiso" and "Sakekasu." M. Kobayashi.—p. 2.

Bacteriology of Dysentery.—Yamaguchi carried out bacteriologic examinations on seventy-two acute cases of dysentery. The bacilli were found in forty-one cases, of which two were of Shiga type, sixteen of Y type of Hiss, twenty-two of Flexner, and one Flexner which did not split mannite. He was able to obtain bacteriophage by treating the isolated bacilli with trypsin.

February, 1925

Immunologic Significance of Gelatin. T. Kishikawa.—p. 5.
Enzyme Action of Pus. S. Imokawa.—p. 5.
Changes in Viscera of Animals Thrown from Aeroplane. T. Wakatsuki and Y. Ishiguro.—p. 6.
*Causes of Pleuritis. S. Kudo.—p. 6.
Heat Testicle. N. Fukui.—p. 7.

Cause of Pleuritis.—Kudo found that inflammation of the pleura occurs in animals which have done severe work or in those which worked with some burden on the back and with a bound chest. Animal experiments also show that rapid wetting or cooling of the body markedly lowers the body temperature and then after several hours the animal either gradually recovers or has a fever. A majority had albuminuria and inflammation of the pleura.

May, 1925

Action of Enzymes. M. Kobayashi.—p. 9.
Relation of Properties and Constituents of Japanese Wine "Sake." M. Kobayashi.—p. 9.
*Influence of Endo's Fuchsin Medium on Agglutinability of Bacillus Paratyphoid A. T. Kishikawa.—p. 9.
*So-Called Bacillus Paratyphoid C. T. Kishikawa.—p. 10.
*Histiocytes in Blood with Vital Staining Method in Test Tube. T. Ueyonahara.—p. 10.

Paratyphoid A Bacillus Studies.—Kishikawa noticed that sometimes the agglutinability of paratyphoid A bacillus grown on Endo medium is markedly decreased, and this is attributed to fuchsin. He further found that this decrease is prevented if fuchsin is added to the medium in the amount of three fifths of the original formula.

Bacillus Paratyphoid C.—Kishikawa reports on a study of biologic characteristics of the London strain of paratyphoid C organisms.

Histiocytes in Blood.—Ueyonahara stained fifty bloods obtained from twenty-one patients and twenty-nine healthy men. Blood histiocytes were demonstrated in all of them. Therefore, he concludes that histiocytes are normal constituents of human blood.

South African Medical Record, Cape Town

23: 201-220 (May 23) 1925

Bismuth in Treatment of Syphilis. H. Gluckman.—p. 203.
Plea for Reviving Operation of Couching. G. L. Johnson.—p. 209.
Treatment of Paralytic Ileus by Hormonal and Neohormonal. S. N. Sennett.—p. 210.
Peritonitis. L. Gordon.—p. 210.

Tubercle, London

6: 417-472 (June) 1925

Serologic Classification of Mammalian and Avian Tubercle Bacilli. A. S. Griffith.—p. 417.
Rate of Dissemination of Virulent Tubercle Bacilli in Normal and Immune Guinea-Pigs. A. K. Krause and H. S. Willis.—p. 438.
Tuberculous Infection and Tuberculosis as Modified by Experimental Pneumonokoniosis. L. U. Gardner.—p. 443.

Annales de Médecine, Paris

17: 437-559 (May) 1925

Myasthenia and the Vegetative System. G. Marinesco.—p. 437.
*Case of Amyotrophic Lateral Sclerosis. A. Souques.—p. 463.
*Enuresis. J. A. Sicard.—p. 470.
*Unilateral Amyotrophic Sclerosis. Barré and Morin.—p. 478.
General Paralysis and Trauma. O. Crouzon.—p. 484.
Dissociated Thalamus Syndromes. J. Lhermitte.—p. 488.
Ataxia with Thermal Anesthesia. Foix and Valière-Vinleix.—p. 502.
Tumors in Cerebellopontile Angle. G. Guillain et al.—p. 525.
Diabetes Insipidus of Traumatic Origin. Roussy and Lévy.—p. 548.

Amyotrophic Lateral Sclerosis of Fifteen Years' Duration.—In the case observed by Souques in a young woman, bulbar symptoms had been noted for nine years and cardiac disturbances for seven years, and the patient is still living. The long course of the disease may be explained by a congenital resistance of the motor neurons.

Pathogenesis of Nocturnal Incontinence of Urine.—Sicard considers enuresis as a local spasm, due to hypervagotonia of the pelvic plexus. He has observed cases in which the incontinence disappeared when asthma, eczema or an infectious disease appeared, or vice versa. Five drops of a solution of 0.01 gm. of atropin sulphate in 10 gm. of water, before retiring, is advised for children between 4 and 10. The dose should be increased every two days, up to ten or twenty drops. The remarkable efficacy of this treatment he regards as convincing proof of the excessive irritability of the vagus innervation of the bladder. Subcutaneous injections of epinephrin and pituitary extracts gave good results in two adolescents with enuresis. Organotherapy, especially thyroid extract, may be efficient. In cases of enuresis with changes in the urinary acidity, phosphates and sodium bicarbonate are successfully used. Enuresis with local affections may yield to an operation. Epidural injection of iodized oil is a helpful adjuvant in the treatment.

Unilateral Amyotrophic Sclerosis from Tumor in Rolandic Area.—Referring to their case in a girl, aged 18, Barré and Morin assert that a cortical lesion in the rolandic region, especially in the ascending frontal convolution, may induce a syndrome similar to Charcot's disease but localized on one side. Death occurred ten months after the first symptoms, and necropsy disclosed the brain tumor on the other side.

Archives de l'Institut Pasteur de Tunis

14: 149-246, 1925

*"Unapparent Infections." C. Nicolle.—p. 149.
Filtrability of Typhus Virus. Nicolle and Lebailly.—p. 213.
Idem. C. Nicolle and G. Blanc.—p. 222.
"Micrococcus Melitensis in Human Milk." E. Burnet.—p. 246.

"Unapparent Typhus."—In his study of experimental typhus in the guinea-pig, Nicolle found that while certain animals inoculated with typhus virus presented no clinical symptoms, during the usual febrile period their blood displayed a virulence equal to that in guinea-pigs with characteristic typhus. Further experiments revealed this afebrile form, exceptional in guinea-pigs, to be the rule in rats. "Unapparent infection" (Nicolle and Lebailly) is an acute disease, a septicemia, with incubation period, regular course and recovery, which leaves a more or less durable immunity, and represents the lightest form of the infection. It is entirely different from latent infection. The unapparent typhus of guinea-pigs is a representative of a world of subpathology that has hitherto escaped detection, but now opens a promising field for research and practical serotherapy.

Archives de Médecine des Enfants, Paris

28: 273-336 (May) 1925

Cases of Leishmaniasis in France. D'Oelsnitz et al.—p. 273.
Eruptions in Infancy. Veyrières and M. Guibert.—p. 287.
Multiple Congenital Contracture. P. Woringer.—p. 300.
*Association of Varicella with Herpes. Gautier and Peyrot.—p. 306.
Polyserositis in Children. J. Comby.—p. 308.

Coexisting Chickenpox and Herpes Zoster.—Gautier and Peyrot treated this case in a girl, aged 5. They assume that the two affections are not of common origin, but were casually associated in the patient.

Revue de Chirurgie, Paris

63: 245-319, 1925

*Hydatid Gas Cyst of the Lung. F. Dévé.—p. 245.
*Solid Tumors of the Appendix. L. Léorat.—p. 296.
*Luxation of the Astragalus. Weitzel.—p. 306.

Hydatid Air Cyst of the Lung.—Dévé refers to what he calls hydatid pneumocysts, that is, the cyst takes up air and the findings suggest a cavity. It differs from hydatid pneumothorax. He has collected and discusses seventy-one cases of these hydatid cysts simulating a pyoneumothorax. In thirty-one cases no operation was attempted, and only 35.4 per cent. spontaneously recovered; 64.5 per cent. proved fatal. In the thirty-seven operative cases, 64.9 per cent. recovered and only 35.1 per cent. died.

Solid Tumors of the Appendix.—Léorat remarks that cancer of the appendix is the least malignant of all cancers of the digestive tract. Recurrence has been known in only 2 per cent. of the cases. The subjects are usually young, between 20 and 35, or children or adolescents. Attacks of pains in the region, without fever, are characteristic, and the region is tender in the intervals. If a tumor is found in the appendix, the glands in the region should be carefully investigated.

Dislocation of the Astragalus.—Weitzel analyzes the findings and the indications for treatment with simple luxation of the astragalus, with or without injury of the malleoli, and also luxations with part of the astragalus torn off.

Schweizerische medizinische Wochenschrift, Basel

55: 405-424 (May 7) 1925

*Pathology of General Paralysis. O. Binswanger.—p. 405.
*New Occurrence of Gerlier's Disease. K. Rehsteiner.—p. 410.
*Subacute Inguinal Lymphogranuloma. V. Tschirky.—p. 414.
Hemorrhages After Extirpation of Adenoids. H. Haag.—p. 417.

Pathology of General Paralysis.—Binswanger points out that necrobiotic changes in the parenchyma of the brain are found in the early stages of general paralysis. It is highly probable that the first tissues affected are the finest elements (Nissl's gray matter). This may occur even in the "neurasthenic" stage. A predisposition—perhaps hypoplasia of the vessels or permeability of the meninges—favors the invasion

of the ectodermal functioning part of the brain, and thus leads to paralysis. Acquired toxic influences also play a rôle.

New Occurrence of Gerlier's Disease.—Rehsteiner has observed seven cases of the disease described by Gerlier as *vertige paralysant*. The symptoms are dizziness, ptosis and paresis of other muscles, especially of the neck. Rehsteiner also observed paralysis of convergence, and in one case a spasm of the orbicularis oculi muscle. The disease affects several members of the household, and recurs in attacks which gradually diminish in strength.

Subacute Inguinal Lymphogranuloma.—Tschirky describes a case of the benign but torpid disease which has been observed to date exclusively in men after an intercourse and an ephemeral ulcer on the penis. The patient improved remarkably after five intravenous injections of a 1 per cent. solution of tartar emetic increasing from 1 to 5 c.c. by each third day. After four more injections of 2 c.c., given within fourteen days, the cure was complete.

Policlinico, Rome

32: 659-693 (May 11) 1925

Modern Views on Rickets. R. Pollitzer.—p. 659.
Spontaneous Rupture of Spleen. E. Capecchi.—p. 665.
Apparatus for Pneumothorax. E. Severini.—p. 667.

32: 695-729 (May 18) 1925

Dold's Reaction. G. Spicca.—p. 695.
*Twenty Years After Suture of the Heart. E. Cecchini.—p. 699.
*Treatment of Pernicious Anemia. Valduga.—p. 701.
Postoperative Jejunal Ulcers. G. Baggio.—p. 703.

Two Patients Twenty Years After Suture of the Heart.—Cecchini reexamined a man who had had a stab wound of the heart sutured seventeen years before. The function was perfect. He has received a report of good health from a similar second patient.

Treatment of Pernicious Anemia by Excochleation of Bone Marrow.—Valduga removed the bone marrow of the femur in a patient who was probably suffering from pernicious anemia. The patient survived the intervention and even felt better for three months.

Brazil-Medico, Rio de Janeiro

1: 211-224 (April 25) 1925

*Modern Treatment of Epilepsy. H. Roxo.—p. 211.
*Pathologic Physiology of the Thyroid. Pimenta Bueno.—p. 213.

Modern Treatment of Epilepsy.—Roxo emphasizes that the primary cause of the epilepsy and the symptoms characterizing it are the guides for treatment. Aside from the cases resulting from destructive brain lesions in early childhood, epilepsy is generally curable, he says. Treatment of syphilis, abstention from alcohol, organotherapy in the epilepsy developing at puberty, and abstention from foods inducing a colloid upset may be indicated in different cases, or stimulation of the emunctories and regulation of liver function. He gave to one group of epileptics 0.10 gm. of luminal at night and 2 gm. of bromid during the day, with excellent results but not when the two were combined. Luminal, however, can be associated with belladonna and spartein. When this is done, the dose of luminal should not be over 0.20 gm. a day. He has noticed that those who respond most readily to the luminal with an eruption are those who require least of the drug to banish the seizures.

Pathologic Physiology of the Thyroid.—Pimenta Bueno presents arguments to prove that all the organs dependent on the same trunk artery form a solid whole in relation to the rest of the organism, although they may have an antagonistic action between themselves.

Crónica Médica, Lima

42: 33-64 (Feb.) 1925

*Nystagmus in Epidemic Encephalitis. Max. González Olaechea.—p. 33.
*Tubal Pregnancy. M. C. Aljovín.—p. 38.
Bill for Reorganization of Health Service. Committee Report.—p. 51.

42: 65-96 (March) 1925

Uterine Fibromyomatosis. Aljovín and Lozada.—p. 65.
Cancer of Uterine Cervix. E. Bello.—p. 73.
Dermatoses in Peruvian Recruits. C. A. de la Puente.—p. 80.
Malformations of External Female Genitals. V. M. Bazul.—p. 83.
Begun, p. 8.

Nystagmus in Epidemic Encephalitis.—The boy, aged 15, had been healthy until the sudden onset of fever, vomiting and general malaise. The fourth day nystagmus of the myoclonic type developed, with hyperesthesia, tremor, myalgia, and a glucose content in the spinal fluid of 0.25 per cent. On assumption of epidemic encephalitis, from 1 to 5 c.c. of a 40 per cent. solution of hexamethylenamin was given by the vein, with Lugol's iodin-iodid solution as adjuvant, and the fever and nystagmus subsided, the patient being discharged from the hospital the twelfth day.

Tubal Pregnancy.—Aljovín and Heraud state that 2.7 per cent. of the 450 gynecologic cases in recent years in the Santa Ana Hospital were instances of tubal pregnancy. Only two of the twelve women were primiparas. Removal of both tubes and the appendix formed the routine procedure, and all the patients recovered. All had a history of tardy menstruation, dysmenorrhea, or other ovarian anomaly.

Lisboa Médica

2: 57-124 (Feb.) 1925

*Diagnosis of Spinal Cord Affections. E. Moniz.—p. 57.
Ultraviolet Rays in Therapeutics. F. Formigal Luzes.—p. 106.
Rapid Diagnosis of Cancer. H. Parreira.—p. 118.

Iodized Oil in Diagnosis of Spine Cord Affections.—Egas Moniz remarks that in some of the cases he reports the diagnosis had been made with other means, and the iodized oil merely confirmed it. But this confirmation is extremely valuable in removing the last doubts and giving the surgeon confidence. In other cases this alone differentiated and located the lesion. Four cases are described in detail. In one, after removal of the lipomatous mass compressing the spinal cord, the oil test revealed that the operation had not been complete. Without this test, precious time would have been wasted waiting for the anticipated benefit from the operation to become apparent. In another case the compression was from serous meningitis. The symptoms had varied in intensity over several years. The iodized oil aggravated the symptoms, the lymphocytes increasing from 0.1 to 25.5. The operation then undertaken, however, was followed by improvement, and the iodized oil possibly cooperated in this. The fourth case was one of spinal pachymeningitis. The cavities in the cord with this are evidently caused by pressure from the hard encircling tissues. Operative measures have sometimes given encouraging results. The mode of descent of the oil is characteristic. The sensory-oil dissociation is instructive, that is, it may be useful to supplement the high injection of the oil with a low injection in the Trendelenburg position a week later. The upper limit of the arrest of the oil is often a vertebra above the site of the sensory disturbances. The meninges are altered but not enough to compress the spine.

Medicina, Mexico City

5: 257-280 (May) 1925

*The Wertheim Operation for Cancer. Martinez Parente.—p. 257.
*Treatment of Uterine Fibromas. Somonte.—p. 259.
Mexican Parasitology. Prolongo.—p. 263. Cont'n.
*Physiologic Carbohydraturia. C. Zuckermann.—p. 272.

Wertheim Operation for Uterine Cancer.—Martinez Parente remarks that the assistant must restrict his intervention to protecting against escape of loops of bowel with one gauze-wrapped hand while with the right he holds the speculum. Instead of a number of sponges, one, 10 or 12 meters long, folded in accordion fashion and fastened to the side of the patient, will be found more convenient for holding back the bowel, free from danger of overlooking a sponge, while it saves considerable time. Another means to save time is to ligate the hypogastric arteries beforehand; this renders ligation of smaller arteries unnecessary and prevents hemorrhage. It also facilitates the search from above downward, for the ureters and glands. Another important point is to have an attendant whose sole task is to hand new instruments so that none shall be used twice.

Uterine Fibromas.—Somonte declares that the roentgen rays are the preferable treatment of uterine fibromas at present, and soon will be for cancer.

Physiologic Glycosuria.—Zuckermann found in thirty-seven normal persons a range of from 0.15 to 0.93 gm. of glucose in the twenty-four hour urine. The average in the women was 0.32 and in the men, 0.45. In some the output of glucose was largest at night; in others during the day.

Revista de Medicina y Cirugia, Havana

30: 133-166 (March 10) 1925

*Prognosis of Prostatectomy. R. Mollá Rodrigo.—p. 135.
Resection of Nerve Cures Fistula of Steno's Duct. Stincer.—p. 153.
Surgical Import of Buccomental Paralysis. Castillo et al.—p. 155.

The Prognosis of Prostatectomies.—Mollá Rodrigo emphasizes that a man with prostatic obstruction is always a sick man and must be treated as such. He is convinced further that the majority of prostatectomy fatalities are due to the anesthetic. The causes of death invoked, the pneumonia, tardy syncope, uremia, anuria and intestinal paralysis, are the consequences of the action of the anesthetic on the organs involved.

30: 167-204 (March 25) 1925

Importance of Cystoscopy in Prostatic Obstruction. Ruiz.—p. 167.
*Modified Rovsing Nephropexy. E. Torroella.—p. 177.
The Meltzer-Lyon Test. R. Machin.—p. 186.
*Obliteration of Hemorrhoids. Ignacio Calvo.—p. 192.

Nephropexy.—Torroella lauds the simplicity and efficacy of his modification of the Rovsing technic, using intraspinal anesthesia, and kangaroo tendon instead of silk.

Treatment of Hemorrhoids.—Calvo's experience with twenty-two cases has confirmed the advantages of the method of obliteration of hemorrhoids by injection at the base of each of from 0.5 to 2 or even 3 c.c. of a 5 per cent. solution of urea and quinin hydrochlorid. Five or six injections at a week's interval form the extreme course. No special preoperative nor postoperative measures are needed, and he never noted any complication, the patient continuing at work throughout.

Revista Médica del Rosario

15: 1-66 (Feb.) 1925

*Hydatid Cyst of the Lung. C. Muniagurria.—p. 1.
*Tuberculin Reaction. Alvarez and Barralt.—p. 15.
Reconstruction of Lower Lip. A. Baraldi.—p. 23.
Multiple Foci in Skin of Fungoid Form of Tuberculosis. E. P. Fidanza.—p. 31.

Hydatid Cyst of the Lung.—Muniagurria comments on the rarity of echinococcosis in Uruguay. He has found only two cases in the total 1,600 records of his service, and has never encountered a case elsewhere. He describes a new case, the girl of 13 presenting a puzzling pulmonary affection explained by the successful removal of an echinococcus cyst.

The Intradermal Tuberculin Reaction in Respect to the Prognosis.—Alvarez and Barralt applied the intradermal test systematically to sixty-eight sanatorium inmates, and state that the outcome of the test did not parallel in any way the course of the tuberculosis. About 28 per cent. were clinically cured of those presenting a weak or negative reaction, and 25 per cent. of those with a strong positive reaction.

Sciencia Medica, Rio de Janeiro

3: 183-278 (March) 1925

*Radiology of Large Vessels. Manoel de Abreu.—p. 183.
Latent Jaundice. O. de Mello.—p. 245.
Case of Genitoglandular Dystrophia. A. A. Xavier.—p. 249.

Radiography of the Ascending Aorta.—De Abreu describes, with forty-two illustrations in the text and ten plates, his method of direct anterior and posterior oblique teleradiography of the ascending aorta and other organs in the chest. His interpretation of the findings was confirmed by the findings with intratracheal injection of iodized oil. He lists the diameters of the aorta at different ages, and the relations between the size of the aorta and the clinical symptoms of aortitis. He also discusses the "radiologic evolution" under the influence of different treatments, saying that with this new method we obtain unprecedented precision.

3: 279-346 (April) 1925

Experiences with Carbon Tetrachlorid. L. Travassos.—p. 279.
Idem in the Navy Hospital. Heraldo Maciel.—p. 282.
*Hemiplegia from Snake Bite. O. de Magalhães.—p. 302.
Vegetarian Diet and Intestinal Flora. Genesio Pacheco.—p. 308.
Jaundice Index of Blood Serum. O. de Mello.—p. 316.
Proteins as Vehicle for Drugs. Custodio da Silva.—p. 318. Cont'n.
General Principles for Treatment of Ulcers. N. Botafogo Gonçalves.—p. 325.

Organic Hemiplegia from Cobra Bite.—The hemiplegia developed the third day, after a period of hemorrhagic manifestations, with hematemesis. The young man did not receive antivenin treatment until later, but is gradually improving. There was nothing to indicate syphilis in the case.

Semana Médica, Buenos Aires

1: 897-952 (April 23) 1925

Constipation from Stretching of Large Intestine. Goyena.—p. 897.
Projectiles in Inner Wall of Orbit. J. Lijó Pavía.—p. 900.
*Prophylaxis of Meteorism in Surgical Cases. M. Somalo.—p. 913.
Spontaneous Meningeal Hemorrhage. T. Fracassi.—p. 916.
Suppurating Fibromas of the Uterus. R. Rinesi.—p. 920.
Bronchopulmonary Aspergillus Mycosis. Castrillón and Borsani.—p. 924.
Gage of Derangement of Metabolism in Diabetes. D. Staffieri.—p. 927.
Surgical Treatment of Bronchial Asthma. P. L. Mirizzi.—p. 930.
Leptospiras and Leptospirilloses. W. H. Hoffmann.—p. 932.
*Secondary Stomach Disturbances. C. Losada.—p. 940.

Suppression of Intestinal Gases at Operations.—Somalo had a patient with enormous recurring eventration, the intestines extremely distended with gases. He administered charcoal freely, and this absorbed the gases so promptly and effectually that the flattened loops were easily reduced and the abdominal wall reconstructed. He completely abolished with charcoal the meteorism in twenty-seven other laparotomies. He precedes it once with castor oil, followed in three hours with the charcoal, in powder or tablet, to a total of 25 gm. a day for two days, and the morning of the operation gives a large dose with only a little water. The charcoal may be continued after the operation. The patients all came to the operation with undistended bowels.

Stomach Disturbances in Disease of Other Organs.—Losada enumerates the points which differentiate primary and secondary stomach disturbances, saying that in the majority of cases the gastropathy is not the primary disease or, if primary, it is perpetuated by disease elsewhere.

1: 953-992 (April 30) 1925

*Survival After Rupture of Heart. Rojas and Elizalde.—p. 953.
Endonasal Operation on Lacrimal Sac. J. Basavilbaso.—p. 957.
Hydrotherapy and Hematology. A. Vinaj.—p. 970.
Eugenics and Cerebral Phonendoscopy. A. Bianchi.—p. 972.
Fulminating Gangrene of Arm in Anthrax. I. Justiniano, Jr.—p. 976.
Means for Repression of Prostitution. P. Beristain.—p. 977.
Case of Hysteric Astasia-Abasia. W. López Albo.—p. 980.

Survival After Spontaneous Rupture of the Heart.—The chronic alcoholic degeneration of the heart led to rupture from a comparatively slight exertion, but the blood escaped in the form of a dissecting hematoma, the character of the clots testifying to slow and gradual extravasation and engorgement of the lungs, allowing survival of several hours. A number of similar cases on record are cited, including an Argentine case with survival of four days after a stab wound of the heart. Wounds of the heart are more promptly fatal when an auricle is involved; with gunshot wounds; and, when the extravasation occurs rapidly and the blood cannot escape from the pericardium.

Beiträge zur klinischen Chirurgie, Berlin

133: 205-366 (Feb.) 1925

Nonspecific Cold Abscesses. E. Melchior.—p. 205.
Function of Bile Duct Sphincter. O. Specht.—p. 213.
Import of Variations in Biliary Passages. Odermatt.—p. 221.
Operative Treatment of Fractures. N. v. Hedry.—p. 237.
*Back-Fire Treatment of Erysipelas. F. v. d. Hütten.—p. 252.
*Treatment of Leg Ulcers. J. Kovács.—p. 260.
*Roentgen-Ray Treatment of Prostatic Obstruction. Krabbel.—p. 266.
Multiple Invagination from Adenoma. N. Novák.—p. 271.
*Kidney Tumors. H. Roth and B. Schwoerer.—p. 277.
*Nerves of Arteries in the Extremities. Hahn and Hunczek.—p. 302.
Retroperitoneal Lymph Cysts. C. Barthels.—p. 307.
Clinical Study of Paratyphoid N. S. Sokoloff.—p. 321.
Operative Treatment of Filariasis. O. Thieme.—p. 354.
The Functional and Mechanical Demands on Young Bone Callus. E. Wehner.—p. 365.

Treatment of Acute Erysipelas with Ethyl Chlorid Freezing.—Hütten reasoned that if the spreading erysipelas encountered a barrier of artificially induced inflammation, it might be arrested, or at least the streptococci so attenu-

ated that the process would die out. The redness, swelling and local heat after freezing with ethyl chlorid persist for about twenty-four hours, and he utilized this reaction as the barrier against the erysipelas in four cases. The results were encouraging when the freezing was carried to the point of blister production. This leaves a pigmented area afterward, so the method is not applicable to the face, but otherwise he says that his experience justifies further trials.

Treatment of Leg Ulcers.—Kovács applied the Kuzmik technic alone in twenty-one of sixty-two cases in the last ten years, and all the patients reexamined in two years were completely cured. After this, in a few certain veins enlarged in other areas or (in seven cases) in the operative area, but never enough to interfere with the earning capacity. Kuzmik passes a silk thread through the skin and around the vein and ties it over a roll of gauze. The ligature can be left for twelve days without necrosis of the skin, during which time a solid thrombus forms and the obliteration of the vessel can be confidently expected. The Klapp method of supplementary subcutaneous suture was applied in forty-one cases, with fatal pulmonary embolism in one.

Roentgen-Ray Treatment of Prostatic Obstruction.—Krabbel states that all the cases of hypertrophy of the prostate at the Aachen-Forst hospital since 1914 have been treated with roentgen rays as the routine procedure. In twenty-three of the twenty-eight cases the desired effect was promptly realized; spontaneous micturition was restored and the cystitis subsided, although the size of the prostate was not much reduced. The disturbances returned in five cases in the course of one to three years, but, in two, disappeared again on resumption of the exposures. The favorable cases were all in men over 70 and the disturbances had not been of long standing, generally beginning with acute retention.

Kidney Tumors.—In 50 per cent. of the thirty-eight cases of kidney tumor analyzed, hematuria, pain and a tumor were associated; cystoscopy was never instructive. Considerable hemorrhage without infection points to a cancer rather than a calculus. Aseptic calculi were never encountered.

Nerves of the Vessels.—Hahn and Hunczek give colored plates showing the pasage of nerve fibers to the arteries of the limbs. Their findings confirm in the main those of Todd and Potts. The anterior tibial is peculiarly well supplied with nerve fibers, all from the external popliteal.

Deutsche medizinische Wochenschrift, Berlin

51: 807-848 (May 15) 1925

Internal Secretion. L. Borchardt.—p. 807.
*Posture Reflexes in Man. H. Hoff and P. Schilder.—p. 810.
Roentgen Treatment of Benign Hemorrhages. E. Vogt.—p. 812.
*Pathogenesis and Treatment of Coxa Vara. Stettner and Wustrow.—p. 815.
*"Pseudopneumothorax." K. Dehio.—p. 817.
*Ebstein's Theory of Calculi. H. Nakano.—p. 819. Conc'n.
*Diuretic Action of Milk and Fruit Diet. W. Brednow.—p. 821.
Transmission of Hypersensitiveness to Mustard Oil. E. Lehner and E. Rajka.—p. 825.
Recovery from Landry's Paralysis. E. Horwitz.—p. 826.
Familial Hypersensitiveness. R. Kochmann.—p. 826.
*Protracted Priapism. K. Laemmle.—p. 827.
*Accidental Strychnin Poisoning. Willführ.—p. 827.
Orthopedics. H. Debrunner.—p. 829.
Secret and Proprietary Drugs. Vorwahl.—p. 829.
Teaching of Pathologic Physiology. A. Bickel.—p. 830.
Thomas Mann's "Zauberberg" from Viewpoint of Tuberculosis Specialist. Schelenz.—p. 831.
Etiology and Treatment of Rickets. W. Rosenthal.—p. 843.

Posture Reflexes in Man.—Hoff and Schilder publish their observations on posture reflexes in man in various diseases. It seems that these primitive reflexes are more pronounced in conditions of apraxia.

Pathogenesis and Treatment of Coxa Vara.—Stettner and Wustrow have devised a supporting apparatus of which they give illustrations.

"Pseudopneumothorax."—Dehio observed for twenty years a patient with signs of pneumothorax. Necropsy revealed the cause in an enormous subpleural sac of air communicating with the bronchus.

Ebstein's Theory of Calculi.—Nakano concludes from his observations that the organic base of urinary calculi is due to secondary adsorption of protein material on the crystallizing mass.

Diuretic Action of Milk and Fruit Diet.—Brednow confirms the diuretic action of a diet of semisolid foods with fruit.

Protracted Priapism.—Laemmle observed a case of priapism of fourteen days' duration resistant even to general anesthesia in a young man whose penis had been manipulated by a woman who refused coitus. The patient recovered after two intravenous injections of a protein preparation.

Accidental Strychnin Poisoning by Drug.—Willführ reports the fatal strychnin poisoning of a child who had eaten a few tablets of "iron and arsenic tablets" (Merck's comprettae) left by the parents within her reach. The strychnin content of this preparation is not indicated with sufficient clearness to attract attention.

Klinische Wochenschrift, Berlin

4: 953-1000 (May 14) 1925

Phototherapy. A. Eckstein.—p. 953.
Deep Sensation of Pressure. Goldscheider.—p. 959.
Action of Sulphur and Sulphur Springs. E. Bürgi.—p. 961.
*Oxyuriasis. J. Wilhelmi and M. Quast—p. 964.
*Dosage of Epinephrin. F. Weinberg.—p. 967.
*Diuresis After Thermic Stimuli. O. A. Rösler.—p. 968.
*The Epinephrin Reaction. E. Kylin.—p. 969.
*Ectoscopy. E. Weisz.—p. 970.
*Gastric Acidity and the Pylorus. T. Bársony et al.—p. 976.
Kahn's Cancer Reaction. H. E. Büttner.—p. 977.
Influence of Serum on Tuberculin Reaction. A. V. v. Frisch.—p. 977.
*Dialysis of Solutions of Arsphenamin. Schreus and Wieler.—p. 977.
*Endocrine Disturbances in Dermatoses. H. Hoffmann.—p. 978.
Microscopy of Living Eye. A. Meesmann.—p. 978.
Møllgaard's "Chemotherapy of Tuberculosis." W. Heubner.—p. 983.
Health Statistics. Freudenberg.—p. 999.

Oxyuriasis.—Wilhelmi and Quast had better results with the "finger nail" test than with examination of the rectum. They wipe all the dirt from the nails with small pieces of cotton soaked in 0.5-1 per cent. sodium hydroxid and held by a forceps; then shake the cotton in the sodium hydroxid solution and centrifugate the latter. Ova of oxyuris were also frequently present in the nose.

Dosage of Epinephrin.—Weinberg found that addition of 0.0001 c.c. of a 0.1 per cent. solution of epinephrin per kilogram of body weight and minute to a continuous intravenous infusion raises moderately the blood pressure in healthy subjects. The dose necessary in dogs is about five times higher.

Diuresis After Thermic Stimuli.—Rösler found in men delayed diuresis after a cold hand-bath and accelerated diuresis after a hot one. This confirms Wertheimer's observation on animals. The vasoconstriction of the kidneys lasted in the latter's experiments longer than the stimulus. The after-effects were also marked in Rösler's observations.

The Epinephrin Reaction.—Kylin found that an intravenous injection of 0.1 gm. of potassium chlorid strengthens the negative phase of the epinephrin reaction.

Ectoscopy.—Weisz describes and illustrates his method of inspection. He observed that the intercostal furrows do not reach everywhere to the costal arch. The smooth islands indicate the position of the spleen and liver, which is of value in exploratory and therapeutic punctures of the pleura. The lower border of the lungs may be easily determined by observation of the respiratory movements in rapid shallow breathing, in phonation of short sounds (as in "kitt") and especially during the patient's sniffing movements. The phonation movements of the abdominal wall are absent over acutely diseased areas (inflammation, perforation of ulcer). The phonation bulging of the intercostal spaces is present with exudates. Therefore ectoscopy is the only physical method which reveals the border between an exudate and the liver. Traces of phonation movements in an area of dulness indicate an encysted exudate among fibrous adhesions. He emphasizes the necessity to make long intervals between pronouncing the word "kitt." He refers for other details—especially the observations on paralyzed muscles—to his book.

Gastric Acidity and the Pylorus.—Bársony, Bokor and Friedrich found that the pylorus, in the same individual is

equally wide during hypacid and hyperacid phases of digestion.

Dialysis of Arsphenamins.—Schreus and Wieler found that various arsphenamin compounds dissolved in serum dialyze less rapidly than when dissolved in salt solution. Nevertheless the difference is not great enough to disprove the disappearance of arsphenamin from the blood by simple diffusion into the tissues.

Endocrine Disturbances in Dermatoses.—Hoffmann found in all his eighteen cases of sclerodermia indications of low tonus of the sympathetic and high tonus of the parasympathetic. The epinephrin response was low (no tremor, slight increase in blood pressure and frequency of the pulse); no hyperglycemia after epinephrin, little alimentary glycemia.

Medizinische Klinik, Berlin

21: 723-760 (May 15) 1925

*Treatment of Inflammations of the Adnexa. O. von Franqué.—p. 723.
Tuberculosis of the Larynx. R. Imhofer.—p. 727.
*Percussion in Brain Tumors. A. Slauck.—p. 732.
*Treatment of Multiple Sclerosis. S. Fischer.—p. 733.
*Pneumothorax Treatment in Grave Diabetes. M. Rosenberg.—p. 733.
Faults of Injection Needles. Steinheil.—p. 734.
Diabetes Insipidus and Syphilis. F. Seligsohn.—p. 734.
Rupture of Diaphragm from Contusion. A. Hedri.—p. 736.
Asthmatic Personality. H. Peiser.—p. 738. Cont'd.
*Organotherapy and Irradiation in Gynecology. Landeker.—p. 740.
Blood Examination for Malaria. Weiss.—p. 743.
*Uterine Mucosa in a Laparotomy Scar. H. Mark.—p. 744.
Action of Ultraviolet Rays on Food. K. Brandenburg.—p. 746.
Present Treatment of Cardiovascular Disease. Edens.—p. 747.
History of Knife Swallowers. F. Pick.—p. 758.

Treatment of Inflammations of the Adnexa.—Franqué discusses prevention in particular. Energetic bimanual palpation and sudden movements during menstruation may carry infectious material into the tubes. Sexual intercourse in the last days before labor causes many fatal infections. It should be omitted in the second half of pregnancy. The treatment of adnexal inflammations consists in an icebag first. After defervescence, daily lavages with 6-10 quarts of hot water and warm dressings should be used for six weeks. Later on, baths are advisable.

Percussion on Brain Tumors.—Slauck confirms the usefulness of direct percussion for localization of superficial tumors of the brain. A stethoscope held in the sagittal suture transmits delicate differences of the sound.

Treatment of Multiple Sclerosis.—Fischer had favorable results in fourteen cases of multiple sclerosis with Credé's ointment, as recommended by Oppenheim. He massages into the skin 2 gm. of the ointment (until it dries) daily for five days; a bath is given on the sixth and rest on the seventh day. He repeats the course four or five times. After four weeks of rest, the same treatment is repeated, using only 1 gm. daily. Then another course after another month—at least for one year.

Pneumothorax Treatment in Grave Diabetes.—Rosenberg's patient with a mild diabetes changed into a grave precoma condition, probably by an exacerbation of her tuberculosis. Artificial pneumothorax had a favorable influence on both conditions. This also shows that tuberculosis does not always increase the sugar tolerance in diabetes.

Combined Organotherapy and Irradiation in Gynecology.—Landeker reports good results with his combination of injections of extracts from uterus, placenta and anterior pituitary with vaginal irradiation with ultraviolet rays in hypoplasia.

Uterine Mucosa in a Laparotomy Scar.—Mark observed a cavernous tumor containing uterine mucosa in the laparotomy scar in a woman. She had been operated on eleven years before for appendicitis. The tumor secreted a bloody fluid during menstruation.

Monatsschrift für Geb. und Gynäkologie, Berlin

69: 277-410 (June) 1925

Physicochemical Aim in Gynecology and Obstetrics. L. Seitz.—p. 281.
Improved Abderhalden Blood Test. H. Sellheim.—p. 283.
*True Menstruation After Beginning of Pregnancy? H. Wintz.—p. 303.
Brain Pressure and Fetal Heart Sounds During Delivery. Esch.—p. 308.
*Evacuation of the Uterus in Abortion. O. v. Franqué.—p. 320.
Value of Tests for Syphilis in Obstetrics. E. Martin.—p. 324.
*Retention of Placenta Fragments. G. A. Wagner.—p. 327.
*Retention of Placenta Fragment Calls for Its Immediate Removal. O. Pankow.—p. 341.
Gwathmey's Method for Painless Childbirth. A. Stein.—p. 344.
*Sacral Anesthesia. H. Eymer.—p. 347.
Kielland Forceps and Cesarean Section. L. Fraenkel.—p. 356.
*Hydatidiform Mole. E. Essen-Möller.—p. 360.
Individual Treatment of Myoma. M. Henkel.—p. 364.
Corpus Luteum Cysts or Cystic Corpora Lutea? R. Schröder.—p. 380.
*Psychotherapy in Gynecology. R. T. von Jaschke.—p. 388.
*Profuse Bloodletting in Eclampsia. H. Schlossmann.—p. 391.
*Stimulation Therapy by Roentgen Irradiation. W. S. Flatau.—p. 401.

True Menstruation After Beginning Pregnancy?—Wintz describes two cases of beginning pregnancy with true menstruation, observed clinically, fourteen and seventeen days after coitus, and pregnancy definitely established later, without intervening coitus. His third case was in a secundipara, treated for ovarian tumor, with history of menses twice after the beginning of the first pregnancy, once in the second. While the uterus suggested pregnancy at the third month, regular menstruation had occurred twice. Laparotomy revealed the corpus luteum of pregnancy in the left ovary, and a second, smaller corpus luteum in the right ovary. Extirpation of this ovary and the parovarian cyst did not interrupt the pregnancy. The smaller corpus luteum thus played no part in the pregnancy, as removal of the corpus luteum of pregnancy early in pregnancy always induces abortion.

Technic for Emptying Uterus in Abortion.—Franqué holds that before evacuation of the uterus the canal must be dilated to at least a finger's breadth. Anesthesia and palpation of the uterus are recommended in any case. Instrumental emptying of the uterus is admissible only up to the ninth week, and with a broad blunt curet. Later than this, exclusively digital examination should be made, with separation of the adherent placenta by the finger. Only parts already loosened, and visible and palpable in the internal os, may be removed by the forceps. After the third month he considers expulsion of the fetus best left to Nature, at least postponed until sufficient dilatation of the os readily allows extraction. Till then, packing with iodoform gauze is advised, or, in the later months, the insertion of a small metreurynter, if, with large fetus, the hemorrhage cannot be arrested with the trunk of the fetus by traction on the legs.

Prophylaxis and Treatment of Retained Placenta Fragment After Delivery at Term.—Wagner believes that the Mojon-Gabastou method is destined to replace not only manual separation of the placenta but also the Credé method of placental expression. The negative outcome of Küster's milk test (injection of milk into the umbilical vein) is a sure sign that there is no defect in the palcenta. After the tentative diagnosis of a defect in 237 cases, the milk test eliminated 187 as only seemingly incomplete; a defect in the placenta was found in forty-two of the remaining fifty-four cases. The slightest suspicion of a missing placenta scrap, at least as large as a filbert, is a definite indication for palpation of the uterus (Zangemeister). With no signs of infection but sudden gushes of blood, he does not consider removal of the placenta fragment a grave risk. In cases with fever on admission, removal of the placental scrap always caused an aggravation (death in three cases). The introduction of a solution of 1 part of pepsin, 5 parts of concentrated hydrochloric acid, and 1,000 parts of distilled water for the digestion and disappearance of the placenta remnant resulted in recovery in six of nine cases admitted with grave infection.

Arrest of Placenta and Palpation.—Pankow urges the avoidance of all manipulations of the uterus in the third stage of labor in order not to disturb the normal mechanism of detachment of the placenta, and increase the possibility of retention of fragments. He advises immediate palpation of the uterus even if only a small placenta scrap is retained, and its removal.

Sacral Anesthesia.—Eymer cautions against pressure on injection. Overdosages of procain in "sacral lumbar anesthesia" are avoidable.

Prognosis and Treatment of Hydatidiform Mole.—Malignant degeneration occurred in 16 per cent. of Essen-Möller's fifty cases. The age of the patient appears to be a factor. The

malignancy was more than double in the patients above 45 years. He asks to what extent routine hysterectomy in moles in women over 45 is justifiable in prevention of malignant degeneration.

Psychotherapy in Gynecology.—Jaschke believes the difference in material may explain the differences in the frequency of mental symptoms as observed by various writers. He notes the greater prevalence in the large cities. He points to modern literature, based largely on psychosexual conflicts, as a factor. While gynecologists who are enthusiasts for psychotherapy point to the unfavorable end-results of operative intervention, these results, he says, are largely due to mistaken indications. He remarks that the end-results after psychotherapy are often poor and that psychotherapy, wrongly practiced, may be harmful. Freud's method, he believes, belongs only to the psychiatrist and not to the gynecologist.

Effect of Profuse Bloodletting in Eclampsia.—Schlossmann considers the effect primarily a removal of poisons. Reflex processes and reduction of the viscosity of the blood play a minor rôle. The decrease in blood pressure is a measure of the effect. Decrease in tension after bloodletting is more favorable than after the administration of drugs. The aim is removal of the poisons by the reflux of tissue fluids into the blood stream, hence the largest possible bloodletting is recommended. As long as the blood pressure remains high, great losses of blood are not dangerous in eclampsia.

Stimulation Therapy by Roentgen Irradiation.—Flatau irradiates only once in hypofunction from infantile development, as he is convinced that favorable results are obtained by a small dose. He has treated with roentgen stimulation doses twenty-one cases of female sterility from some hypoplastic or asthenic anomaly of the ovarian function, with pregnancy to date in twelve of these, in eight instances carried to term, with healthy child. Rigorous adherents of eugenics must be opposed to treatment for sterility, as it is usually from organic insufficiency based on some constitutional anomaly. Flatau emphasizes that the true physician's foremost duty is to help his patient in his present distress, not to consider the viewpoint of eugenics. Polymenorrhea in girls and young women without heart weakness and hemorrhagic diathesis seems an indication for irradiation of the spleen. He agrees with Sippel that the intensity of menstruation depends partly on a quantitatively or qualitatively affected internal secretion of the ovary.

Münchener medizinische Wochenschrift, Munich

72: 793-840 (May 15) 1925

*Curability of Tuberculous Meningitis. K. Koch.—p. 793.
*Scrofula and Affections of Teeth. H. J. Tholuck.—p. 794.
Tuberculosis of Old Age. R. Taubert.—p. 798.
Qualitative Diagnosis and Treatment in Extrathoracic Tuberculosis. H. Fechter.—p. 799.
Roentgen Treatment of Pulmonary Tuberculosis. F. Röver.—p. 801.
*Surface Treatment with Very Soft Roentgen Rays. Bucky.—p. 802.
Histology of Effects of Very Soft Rays. Buschke and Sklarz.—p. 806.
*Treatment of Pruritus Vulvae. W. Arnoldi and K. Warnekros.—p. 807.
Lobelin in Surgical Paralysis of Breathing. K. Hempel.—p. 808.
*Treatment of Streptococcus Infections. Eytel.—p. 810.
*Fatal Poisoning with Oil of Chenopodium. C. Braun.—p. 810.
*Regeneration of Hair Pigment. W. Barfurth.—p. 811.
"Metal Chambers for Blood Counts." W. Roerdansz.—p. 812.
"Ponndorf Vaccination." Burchard.—p. 812.
Rheumatic Foot Disturbances. H. Malten.—p. 813.
Treatment of Fractures. F. Lange.—p. 814.
Tuberculin Tests in Schools. Klein and Worringen.—p. 816.
The Proposed Bill for Protection of Mothers. Klotz.—p. 817.
Associations of Clinic Assistants. M. A. Busch.—p. 818.
Taxation of the Liberal Professions. R. Wassermann.—p. 819.

Curability of Tuberculous Meningitis.—Koch's patient was a 9 year old boy who had had two years before a tuberculous spondylitis. Three weeks after falling from a chair and hurting his back he developed all the symptoms of tuberculous meningitis (including the presence of bacilli) but he recovered completely.

Scrofula and Affections of Teeth.—Tholuck observed a lowering of the incidence of enlarged glands in school children after their teeth were taken care of.

Surface Treatment with Very Soft Roentgen Rays.—Bucky found that only one eighth of the radiant energy necessary to produce an erythema with hard unfiltered rays is needed when using extremely soft rays. This suggests that the apparatus for superficial treatment used so far is unnecessarily large and expensive.

Treatment of Pruritus Vulvae.—Arnoldi and Warnekros found that an antidiabetic diet (Petrén or Falta) cured or alleviated the itching not only in diabetic but also in nondiabetic women within five to eight days.

Treatment of Streptococcus Infections.—Eytel had good results in various streptococcus infections when using the prescription recommended by Unna in erysipelas. He uses: ammonium carbonate, 5 gm.; anisated spirit of ammonia, 5 c.c.; syrup, 20 c.c.; water to make 200 c.c. One tablespoonful every hour or every two hours.

Fatal Poisoning with Oil of Chenopodium.—Braun reports on the death of a child, 22 months old, after ingestion of 12 drops of oil of chenopodium.

Regeneration of Hair Pigment.—Barfurth had a grave furuncle of the temporal region. The hair which grew there later had a dark pigment although the surrounding hair is gray and the rest of the head a dark blond.

Wiener klinische Wochenschrift, Vienna

38: 525-548 (May 14) 1925

*Hypertrophy of the Prostate. T. Hryntschak.—p. 525.
*Diagnosis of Infiltrations of the Lungs. Czyhlarz and Pick.—p. 529.
*Early Diagnosis of Pregnancy. P. Werner.—p. 530.
Epiploitis. W. Goldschmidt.—p. 530.
*Glucose Injections in Varicose Veins. Remenovsky and Kantor.—p. 532.
Polyneuritis and Tabes. H. Spitzer.—p. 535.
"Ileus Serum." L. Schönbauer.—p. 537.
Treatment of Extrasystoles. M. Herz.—p. 538.
Course and Treatment of Tuberculous Peritonitis. C. Reitter. Supplement.—pp. 1-16.

Errors in Diagnosis and Treatment of Hypertrophy of the Prostate.—Hryntschak prefers the term adenoma of the prostate. It changes into a cancer in 10-20 per cent. of the patients, but—because of its sequelae—can be considered clinically malignant in every case. He prefers the French bimanual method of palpation—the patient on his back with flexed knees and hip joints. The physician's hand over the symphysis presses the enlarged gland toward the finger in the rectum. Tenderness and nodules arouse suspicion of cancer. The chronic retention should not be evacuated at once. Gradually increasing amounts should be removed for ten days. He considers the diagnosis itself as indication for surgical treatment.

Diagnosis of Infiltrations of the Lungs.—Czyhlarz and Pick examined the puncture fluid. Lobar pneumonia gives leukocytes; cheesy pneumonia, epitheloid cells. An infarction fluid contains chiefly erythrocytes.

Early Diagnosis of Pregnancy.—Werner made repeatedly the diagnosis of perimetritis in women complaining of pains in the abdomen around the time of the expected menstruation. The uterus was quite tender. The disturbance was due to beginning pregnancy.

Glucose Injections in Varicose Veins.—Remenovsky and Kantor inject 5 c.c. of a 50 per cent. solution of glucose into the varicose vein after expression of the blood, and compression of the vein above and below the point of injection.

38: 549-576 (May 21) 1925

Histologic Findings in Gout. A. M. Brogsitter.—p. 549.
*Thermocautery in Minor Surgery. F. Starlinger.—p. 552.
Phlegmon of Duodenum. H. Schneider.—p. 556.
*The Sensation of Thirst. F. Brunn.—p. 558.
*Pathogenic Mites in Vienna. K. Toldt, Jr.—p. 559.
*Roentgen Treatment of Arthritis Deformans. K. Staunig.—p. 561.
Partial Water Bed. P. Beck.—p. 561.
Vomiting by Infants. A. F. Hecht.—p. 563.
Endocrine Diseases and the Digestive Apparatus. F. Pineles. Supplement.—pp. 1-15.

Thermocautery in Minor Surgery.—Starlinger recommends the thermocautery in furuncles. It is painless, leaves a small scar, and requires no drainage; a moist dressing is sufficient. He also used it successfully in mastitis.

The Sensation of Thirst.—Brunn is opposed to the current opinion that thirst is due to an irritation of the hypothalamic center by an increase in the crystalloids of the blood. He observed an increase of 0.08 per cent. of sodium chlorid in

the blood without thirst after drinking salt solutions. In prolonged experiments, the sodium chlorid concentration of the blood and cerebrospinal fluid was 80 per cent. higher than at the beginning, and yet the water intake did not rise. Leschke's observation on thirst after sudden injections of hypertonic solutions is only an exception; Brunn never saw it, yet he admits that the injections may not be sufficient to cause an increase of the blood chlorids amounting to 0.05-0.1 per cent. Diarrhea and sweating produce thirst by withdrawing the fluid from the tissues. He sees an important part of the problem in the shifting of fluid from the tissues into the blood. Not all the tissues are equally important in producing the thirst. The mucous membranes of the mouth and esophagus play the main rôle. The nerves report to the vegetative center for thirst that there is a stream of fluid to the blood from the tissues and perhaps from the reticulo-endothelial system.

Pathogenic Mites in Vienna.—Toldt found in Mödling foci of *Leptus autumnalis* Shaw which cause on the next day itching papules persisting for eight days. The disease is practically identical with the thrombidiasis he found in the Tyrol.

Roentgen Treatment of Arthritis Deformans.—Staunig had good results with irradiation in arthritis deformans.

Zeitschrift für urologische Chirurgie, Berlin

17: 251-381 (May 4) 1925

*Decapsulation and Denervation of Kidney. Keller and Rost.—p. 251.
Cystic Degeneration of Kidneys. J. G. Gottlieb.—p. 256.
Unusual Urethra Deformity and Perineal Phlegmons. E. Brack.—p. 272.
*Tumors of the Bladder. F. Fuchs.—p. 277.
*To Induce Atony of the Ureter. R. Andler.—p. 298.

Decapsulation and Denervation of the Kidney in Toxic Conditions.—Keller and Rost repeated and amplified V. Hoffmann's experiments on kidney decapsulation and denervation in animals, but were unable to confirm his favorable results in toxic states.

Tumors of the Bladder.—Fuchs treats these tumors by electrocoagulation, patients with pedunculated papillomas as outpatients, those with broad-based papillomas and cancer under clinical control. When in the cancer cases necrosis of the surface has removed the danger of inoculation of the material, extirpation by high section follows, if the condition is good.

Atony of the Ureter with Dilatation and Hydronephrosis.—Andler distinguishes between atony with and without a functionally capable ureter mouth. Experiments on animals revealed that severing all the nerves leading to the kidney pelvis and ureter causes atony and dilatation with disturbance in the output of urine. Hence not only isolating the accessible part of the kidney pelvis and entire ureter, but also denervation of the kidney pedicle is necessary to cause atony and dilatation of the kidney pelvis and ureter. During section of the nerve fibers, contractions increasing regularly in number and intensity were noted. In dogs and rabbits the peristalsis of the kidney pelvis and ureter is controlled by higher nerve centers, but automatic contractions are also possible. He recommends Läwen's paravertebral or Kappis' splanchnic anesthesia for removal of a calculus impacted in the ureter.

Zentralblatt für Chirurgie, Leipzig

52: 1073-1120 (May 16) 1925

*Division of Pylorus Muscle in Spastic Conditions. Butzengeiger.—p. 1074.
*Diagnosis of Chronic Appendicitis. B. Przewalsky.—p. 1078.
*Local Anesthesia. G. Joachimoglu and J. Zeltner.—p. 1079.
*Suprarenals in Spontaneous Gangrene. Dmitrijew.—p. 1081.
Suprarenal Transplantation in Addison's Disease. Dmitrijew.—p. 1082.

Extramucous Division of Pyloric Muscle in Spastic Conditions.—Butzengeiger recommends further application and test of Payr's procedure, especially in chronic spastic conditions of the stomach with symptoms of ulcer, on failure of conservative treatment. The results in his fifteen cases were surprisingly good at the time and later.

Diagnosis of Chronic Appendicitis.—Przewalsky observed a valuable sign in many young persons in the flat swelling, above Poupart's ligament, of lymph glands and cellular tissue around the right circumflex iliac artery. The right iliac muscle, laterally from the external iliac artery, was always somewhat flatter than the left, from atrophy due to the inflammatory processes in the crural nerve branches. This atrophy impairs functioning. Healthy persons, he says, can hold up the outstretched leg for about two minutes. In cases with the swelling and atrophy, the time the extended right leg can be thus sustained is less by fifteen seconds or more than with the left leg. As the subject reclines, the heel of the outstretched leg lies in the physician's hand, a few inches above the level of the bed or table. He begins to count the seconds the moment he removes his hand.

Ortho-Oxybenzylalcohol for Local Anesthesia.—Joachimoglu and Zeltner's figures indicate that ortho-oxybenzylalcohol is about twenty times less poisonous than cocain and eight times less than procain.

Rôle of Suprarenals in Origin of Spontaneous Gangrene.—Oppel considers hyperfunction of the suprarenals as the cause of spontaneous gangrene. Dmitrijew says that in many cases the reverse seems to be the rule—suprarenal hypofunction; an increase in the vasocontricting substance in the blood was noted six weeks after suprarenalectomy (Duchinowa). He describes one of his three cases of spastic gangrene with good results following the graft of a suprarenal taken from a dog.

52: 1121-1168 (May 23) 1925

*Artificial Respiration. O. Roth.—p. 1122.
Terminology for Aneurysms. S. Rubaschow.—p. 1126.
*Local Anesthesia with Potassium Bromid. Dmitrijew.—p. 1128.
Modified Babcock Operation for Varicose Veins. M. Schapiro.—p. 1128.
Steinach's Operation and Testicle Transplantation. Dmitrijew.—p. 1130
"Periarterial Sympathectomy in Epilepsy." H. Flörcken.—p. 1131.

Effect of Artificial Respiration.—Roth says that no method is capable of restoring the circulation of the blood. The chief effect of artificial respiration is always the reflex action on the respiration center and the heart.

Local Anesthesia by Injection of Potassium Bromid.—Dmitrijew reports forty-five operations done under local anesthesia from injection of a 1 per cent. solution of potassium bromid. The list includes two gastro-enterostomies and two lip cancer operations.

Zentralblatt für Gynäkologie, Leipzig

49: 1057-1120 (May 16) 1925

The Defective Training of Physicians in Obstetrics. Engelmann.—p. 1058.
The Blood Picture and Sedimentation in Gynecology and Obstetrics. M. Würzburger.—p. 1061.
Disinfection with Chloramine. G. Frommolt.—p. 1075.
*Painless Delivery by Synergistic Method. Lörincz.—p. 1081.
*When Does Pregnancy Begin? W. Reni.—p. 1084.
Antefixation of Retroflexed Uterus by Laparotomy. Penkert.—p. 1086.
Foreign Bodies in Abdominal Cavity After Attempted Abortion. W. J. Zempléni.—p. 1093.

Painless Childbirth by Synergistic Method.—Lorincz used Gwathmey's method in fifty cases, with excellent results. After the rectal injection, delivery, he says, must be ended within four to five hours, because of the short duration of the effect. In general, the injection may be given in multiparas with the os dilated to 4 cm., without regard to the head or to the bag of waters. In primiparas it is deferred until there is greater dilatation and the head at its greatest circumference has passed the pelvic inlet. In some women unconsciousness is so deep that straining, the most important force in the expulsion period, is suspended. He employed the method only in cases with no anticipated labor complications, withholding it if even a slight complication seemed probable. In one complication, however, he definitely recommends the synergistic method, namely, in eclampsia.

When Does Pregnancy Begin?—On the basis of his observations in Chinese, Japanese, and European women, Reni concludes that pregnancy begins in the course of one to three days after the fertilizing coitus, and that the ovum of the last menstruation is fertilized.

49: 1121-1168 (May 23) 1925

Transposed Sigmoid Flexure as Substitute for Contracted Bladder. P. Strassmann.—p. 1122.
*Vicarious Menstruation. F. Lönne.—p. 1129.
Intraperitoneal Removal of Ureter Calculus. R. Tateyama.—p. 1134.
*Outlook for Fetus with Pyelitis in Mother. H. Naujoks.—p. 1136.
*Kidney Function During Pregnancy. A. W. Chochloff.—p. 1139.

Vicarious Menstruation.—Lönne reports an unusual case of regular hemorrhage from the bladder and left ureter, corresponding to the menstrual period, in a woman, aged 26, with absence of menstrual discharge from the uterus. Bilateral roentgen castration after the failure of psychotherapy and organotherapy arrested the hemorrhage.

Outlook for Fetus with Pyelitis in Mother.—Naujoks says that pyelitis in the mother is a grave menace to the fetus and that in such cases many pregnancies terminate prematurely. Treatment by diet and administration of drugs should be undertaken as early as possible; in most cases disappearance of the grave symptoms or complete recovery follows. On failure of conservative measures, more drastic treatment is indicated. Induced abortion is the last resort in treatment of inflammation of the kidney pelvis. He believes that even in a large practice this should be necessary hardly once in a decade. Kidney operations during pregnancy should be considered only if the induced abortion proves ineffectual.

Kidney Function During Pregnancy.—The polyuric character of the diuresis in the last months of pregnancy, with relatively normal fluctuations in the specific gravity of the urine, seems to Chochloff to be dependent on a hyperexcitability of the water-excreting apparatus of the kidneys. The concentrating ability of the kidneys is not affected. Elimination of foreign substances (uranin) from the organism takes place somewhat more rapidly during pregnancy.

Zentralblatt für innere Medizin, Leipzig

46: 465-480 (May 16) 1925

*Blocking the Splanchnic Nerve to Arrest Renal Spasm. H. Havlicek.—p. 465.

Blocking the Splanchnic Nerve to Arrest Vascular Spasm in the Kidney.—Havlicek observed recovery in anuria of two children with scarlet fever nephritis and also in anuria in the course of eclampsia after anesthesia of the splanchnic nerve had been induced. The injection, which had been recommended by Neuwirth in reflex anuria, apparently breaks up the spasm of the afferent arteries of the glomeruli, which constitutes—according to Volhard—the most important phenomenon in acute nephritis. Palpation of the kidney helped in another patient. He suggests also an intravenous injection of papaverin.

Časopis lékařů českých, Prague

64: 721-804 (May 9) 1925. Hlava Memorial Number

*Cancer and Changes of Reactivity of Tissues. R. Kimla.—p. 721.
*Experimental Tuberculosis in Clinical Diagnosis. I. Honl.—p. 723.
*Cancer. V. Neumann.—p. 725.
*Etiology of Lymphogranulomatosis. J. Lukeš and V. Jelinek.—p. 728.
*Acute Arteriosclerotic Chorea. Z. Mysliveček.—p. 732.
Reconstruction of Common Bile Duct. R. Jedlička.—p. 735.
Primary Infection and Reinfection in Tuberculosis. J. Jedlička.—p. 741.
*Hexamethylenamin in Preparation of Vaccines. V. Renč.—p. 755.
Modification of Buchholz' Method. V. Renč.—p. 756.
Rhabdomyoma of the Heart. H. Šikl.—p. 757.
*Heterotopic Bone Marrow in the Suprarenals. V. Jedlička.—p. 762.
Amebic Abscess of the Liver. M. Zimová.—p. 768.
Carcinoids of Appendix and Small Intestine. J. C. Ortynský.—p. 775.
Teratogenic Chorio-Epithelioma in a Man. J. Jerman.—p. 783.
Congenital Goiter. J. Roubal.—p. 795.

Cancer and Changes of Reactivity of Tissues.—Kimla produced benign papillomatosis on the ears of a rabbit with tar. Thirteen months after interruption of the procedure he began with a new application of tar near the tail of the animal. After two months a sudden hyperemia of the ear appeared, together with development of squamous epitheliomas—even after the new treatment had been discontinued. He believes that cancer may be a reaction to a chronic repeated action of a stimulus—analogous to the different reaction to tuberculosis in an organism rendered allergic.

Experimental Tuberculosis in Clinical Diagnosis.—Honl inoculated the testes of guinea-pigs with the material. The infection was extremely acute in middle sized animals, 40 per cent. of them dying within ten to fifteen days, and a small number after thirty days. Punctures or the tuberculin test may speed up the diagnosis in the latter cases, retarded by the low virulence of the tubercle bacilli. The method is easier and the results are obtained earlier than with any other inoculation test. It is also suitable for obtaining pure cultures.

Cancer.—Neumann demonstrates by statistics of deaths and the percentage of clinically overlooked cancer in his necropsy material that almost one third of people, who reach 30 years of age, die from cancer. He was unable to produce tar cancer in guinea-pigs or rats in spite of various additional procedures. Strong light had apparently no influence on the production of tar cancer in mice. The latter is neither contagious nor inherited.

Etiology of Lymphogranulomatosis.—Lukeš and Jelinek confirm the presence of Much's granules in three out of their six cases of lymphogranulomatosis. Yet they found them also in lymph glands in three out of eleven controls who had neither Hodgkin's disease nor tuberculosis.

Acute Arteriosclerotic Chorea.—Mysliveček reports the clinical and anatomical findings in an elderly woman who died twelve days after the onset of choreatic movements. Only chronic arteriosclerosis of the brain was found. The sudden onset of the chorea might have been provoked by recent hemorrhagic foci in the right occipital lobe.

Hexamethylenamin in Preparation of Vaccines.—Renč prefers a 5 per cent. solution of hexamethylenamin for preservation of autogenous vaccines. He recommends to make the second injection after four to eight days to avoid injecting a superfluous amount of antigen.

Heterotopic Bone Marrow in the Suprarenals.—Jedlička describes two cases of tumors consisting of heterotopic bone marrow tissue in the suprarenal glands.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

1: 2309-2404 (May 23) 1925

*Astereognosis. H. C. Rümke.—p. 2310.
*Sea Climate in Pulmonary Tuberculosis. C. M. Mol.—p. 2320.
*Vaccine Treatment in Whooping Cough. J. M. Wiggelendam.—p. 2326.
*Convalescents' Serum in Measles. J. C. Schippers.—p. 2328.
Early Differentiation of Angioma of Choroid. Houwer.—p. 2330.
*Tuberculosis of the Stomach. W. F. Suermondt.—p. 2335.
Typhoid with Negative Bacteriologic Findings. Pluim.—p. 2341.
Impressions of a Health Officer in the United States. Walch.—p. 2357.

Astereognosis.—The case described by Rümke sustains the assumption that astereognosis is an independent disturbance. It may be induced by a focus in the midbrain.

Influence of Sea Climate on Pulmonary Tuberculosis.—Mol's experience and impressions are that the fever and tendency to hemoptysis are favorably influenced by the seashore climate.

Vaccine Treatment of Whooping Cough.—Wiggelendam advocates vaccine therapy as soon as the disease is diagnosed, in young or old. His experience in thirty-four cases shows that we apparently can count on good results in 90 per cent. of the cases.

Convalescents' Serum in Measles.—Schippers arrested an impending epidemic of measles in a children's hospital with preventive injections of convalescents' serum.

Tuberculosis of the Stomach.—Suermondt found after resection of a gastric ulcer that it was an exclusively tuberculous process, with connected cheesy glands. No other manifestations of tuberculosis were discovered elsewhere but roentgenoscopy revealed traces of an apparently healed small tuberculous focus in the right lung.

Acta Path. et Microbiol. Scandinavica, Copenhagen

1: 353-447, 1924

Bactericides. III. F. Wulff.—p. 353.
Experimental Therapeutics with Salts of Metals. L. E. Walbum.—p. 378.
Primary Pulmonary Cancer in Tarred Rats. P. Möller.—p. 412
*Cause of Sarcoma. F. Harbitz.—p. 438.

Chronic and Acute Inflammations as Cause of Sarcoma.—Harbitz' case of chronic osteomyelitis in a man, aged 71, he says, shows the direct development of neoplastic granulation tissue rich in cells into a spindle-celled sarcoma. He also describes a case, in a boy, aged 13, of sarcoma of the tibia, preceded by an acute suppurative osteomyelitis after trauma. Since the roentgenograms four months after the appearance of the osteomyelitis and also the operation revealed only necrotic bone tissue, he concludes that the osteomyelitis antedated the tumor. He is inclined to accept a causal relation between them.